

The search histories are listed at the end of this file.

ETC SEARCH REPORT.

43/9/1 (Item 1 from file: 23)
DIALOG(R) File 23:CSA Technology Research Database
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0003406798 IP ACCESSION NO: A88-30884
Dynamic theory of picosecond optical pulse shaping by
gain-switched semiconductor laser amplifiers

SCHOELL, ECKEHARD
Aachen, Rheinisch-Westfaelische Technische Hochschule, Federal Republic of
Germany [SCHOELL]

IEEE Journal of Quantum Electronics, v 24, p 435-442, Feb. 1988
PUBLICATION DATE: 1988

CONFERENCE:
, UNITED STATES

DOCUMENT TYPE: Journal Article
RECORD TYPE: Abstract
LANGUAGE: ENGLISH
ISSN: 0018-9197
NOTES: DFG-supported research
NO. OF REFS.: 20
FILE SEGMENT: Aerospace & High Technology

ABSTRACT:

A dynamic theory of semiconductor laser amplifiers is developed that takes into account the coherent time-dependent amplification of an incident optical pulse as well as the nonlinear dynamics of the semiconductor laser when driven by an unbiased injection-current pulse. For suitable time delays between the optical and the electrical pulse, a strongly nonlinear self-induced shortening of the emitted laser pulse is predicted. (I.E.)

DESCRIPTORS: *Dynamic models; *Laser outputs; *Optical switching; *Picosecond pulses; *Semiconductor lasers; *Ultrashort pulsed lasers; Continuous wave lasers; Time dependence
SUBJ CATG: 36, LASERS AND MASERS

43/9/3 (Item 2 from file: 350)
DIALOG(R) File 350:Derwent WPIX
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 009602754
 WPI Acc No: 1993-296302/199338
 XRPX Acc No: N93-228388

Optical transmission equipment for non-return-to-zero modulator -
 incorporates **laser** diode driven by superimposed **currents**
 corresp. to modulating signal, DC bias **voltage** and smaller
 clock sine-wave.

Patent Assignee: TOSHIBA KK (TOKE)
 Inventor: KAMINISHI K
 Number of Countries: 003 Number of Patents: 004
 Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
DE 4305418	A1	19930916	DE 493305418	A	19930222	199338 B
JP 5244094	A	19930921	JP 9239007	A	19920226	199342
US 5444561	A	19950822	US 9314686	A	19930208	199539
DE 4305418	B4	20040729	DE 493305418	A	19930222	200449

Priority Applications (No Type Date): JP 9239007 A 19920226

Abstract (Basic): DE 4305418 A

A **semiconductor laser** (LD) is pulsed by a
laser driver (11) providing a **current** by superposition of
 an NRZ modulation signal (DT), a bias **voltage** (BS) and a clock
 signal (CK). An optical fibre (13) conveys the **laser** beam to a
 photodetector (PD), whose electrical **output** is preamplified (15)
 and divided between a data regenerator (17) and a clock signal extractor (16).

The **laser** driver incorporates three convertors of the
 respective input signals into proportional **currents**, and a
combiner. The clock signal is a sinusoid with **amplitude**
 smaller than the DC bias **voltage**.

USE/ADVANTAGE - In UHF AM transmission at giga-bit per second
 rates. Simple and economical circuit structure can extract clock signal
 continuously without detriment to transmission signal pattern.

Abstract (Equivalent): US 5444561 A

The optical transmission appts. has an **output** device for
 outputting a **laser** light from a transmission side, the
laser light being derived by superposing a DC bias and a clock
 signal on an NRZ modulation signal. The DC bias is greater than a
 threshold **current** of a **semiconductor laser**, and the
 clock signal is a **continuous wave** which has an
amplitude smaller than a difference between the DC bias and the
 threshold **current** and which is synchronous with the NRZ modulation signal.

An optical fibre transmits the **laser** beam output from
 the **output** device to a reception side, and a photodetector senses
 the transmitted **laser** light and converts it to an electrical
 signal. A clock extractor obtains the clock signal, which is the
continuous wave, from the electrical signal obtained by the
 photodetector. A data regenerator derives the NRZ modulation signal
 from the electrical signal obtained by the photodetector, in accordance
 with the extracted clock signal.

USE/ADVANTAGE - E.g. for telecommunications, computer links etc.
 Can continuously extract clock signal without being affected by
 transmission pattern.

43/9/4 (Item 1 from file: 2)

DIALOG(R) File 2:INSPEC

(c) Institution of Electrical Engineers. All rts. reserv.

07070802 INSPEC Abstract Number: A9824-4255P-015, B9812-4320J-125

Title: Room temperature CW GaAs/AlGaAs vertical cavity surface emitting semiconductor laser fabricated by selective oxidation and selective etching

Author(s): Kang Xuejun; Lin Shiming; Gao Junhua; Gao Honghai; Wang Qiming; Wang Hongjie; Wang Lixuan; Zhang Chunhui

Author Affiliation: Inst. of Semicond., Acad. Sinica, Beijing, China

Journal: Chinese Journal of Semiconductors vol.17, no.11 p.873-6

Publisher: Science Press,

Publication Date: Nov. 1996 Country of Publication: China

CODEN: PTPDZ ISSN: 0253-4177

SICI: 0253-4177(199611)17:11L:873:RTGA;1-L

Material Identity Number: A658-98024

Language: Chinese Document Type: Journal Paper (JP)

Treatment: Practical (P); Experimental (X)

Abstract: We report on a GaAs/AlGaAs vertical-cavity surface-emitting semiconductor lasers fabricated by selective oxidation and selective etching. The current aperture is formed by the buried oxide layers within monolithic distributed Bragg reflectors. The lowest threshold of 3.8 mA is achieved with a 4 μ m square active region, continuous-wave at room temperature, the maximum output power is greater than 1 mW, its angle of divergence is less than 7.8 degrees and the pulse rise time is less than 100 ps when measured at high frequency. A 2*3 2-D array is obtained. (7 Refs)

43/9/5 (Item 2 from file: 2)

DIALOG(R) File 2:INSPEC

(c) Institution of Electrical Engineers. All rts. reserv.

06789038 INSPEC Abstract Number: A9803-4255P-023, B9802-4320J-037

Title: VCSEL array fabricated by selective etching and selective oxidation

Author(s): Lin Shiming; Kang Xuejon; Wang Qiming; Gao Junhua; Gao Honghai
; Wang Hongjie; Wang Lixnan; Zhang Chunhui

Author Affiliation: Inst. of Semicond., Acad. Sinica, Beijing, China

Journal: Proceedings of the SPIE - The International Society for Optical
Engineering Conference Title: Proc. SPIE - Int. Soc. Opt. Eng. (USA)

vol.2886 p.10-14

Publisher: SPIE-Int. Soc. Opt. Eng,

Publication Date: 1996 Country of Publication: USA

CODEN: PSISDG ISSN: 0277-786X

SICI: 0277-786X(1996)2886L:10:VAFS;1-#

Material Identity Number: C574-96245

U.S. Copyright Clearance Center Code: 0 8194 2287 8/96/\$6.00

Conference Title: Semiconductor Lasers II

Conference Sponsor: SPIE; China Opt. & Optoelectron. Manuf. Assoc.;
Chinese Opt Soc

Conference Date: 6-7 Nov. 1996 Conference Location: Beijing, China

Language: English Document Type: Conference Paper (PA); Journal Paper

Treatment: Experimental (X)

Abstract: The effects of the thickness of the oxidized layer, reaction
temperature and carrier gas flow on the oxidation rate of Al/sub x/Ga/sub
1-x/As-AlAs-GaAs heterostructures are presented. The electrically-pumped
GaAs/AlGaAs vertical cavity surface emitting laser 2D arrays
fabricated by selective etching and selective oxidation are described. The
square current flow aperture of $4 \times 4 \mu\text{m}^2$ are formed by the
buried oxidized AlAs layers formed on both top and bottom distributed Bragg
reflectors adjacent to the active region. The serious resistance of the
devices are 60-80 Ω . The continuous-wave threshold
current as low as 3.8 mA is obtained at room temperature. The devices
show the maximum output power over 1 mW. Their angles of
divergence are less than 7.8 degrees and the pulse rise times are
less than 100 ps in the high speed pulse response measurements.
The 2×3 2D arrays are obtained. The thresholds of the devices in the array
are within 6 ± 0.5 mA. (13 Refs)

Descriptors: aluminium compounds; distributed Bragg reflector
lasers; etching; gallium arsenide; high-speed optical techniques;
III-V semiconductors; laser beams; laser cavity resonators;
laser variables measurement; molecular beam epitaxial growth; optical
fabrication; oxidation; semiconductor laser arrays; surface
emitting lasers

Numerical Indexing: resistance $6.0\text{E}+01$ to $9.0\text{E}+01$ ohm; current $3.8\text{E}-03$ A;
time $1.0\text{E}-10$ s

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43/9/6 (Item 3 from file: 2)

DIALOG(R) File 2:INSPEC

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05761010 INSPEC Abstract Number: A9420-4260D-017, B9410-4320L-032

Title: Compact VCSEL module with butt-coupled fibre for efficient modelocking

Author(s): Fiedler, U.; Moeller, B.; Zeeb, E.; Jung, C.; Ebeling, K.J.

Author Affiliation: Dept. of Optoelectron., Ulm Univ., Germany

Journal: Electronics Letters vol.30, no.15 p.1226-7

Publication Date: 21 July 1994 Country of Publication: UK

CODEN: ELLEAK ISSN: 0013-5194

U.S. Copyright Clearance Center Code: 0013-5194/94/\$7.50+0.00

Language: English Document Type: Journal Paper (JP)

Treatment: New Developments (N); Practical (P)

Abstract: A novel compact modelocking source using an electrically pumped vertical cavity surface emitting laser (VCSEL) with an external fibre optic resonator is presented. CW threshold current of the modelocking configuration is as low as 1.7 mA. The output pulse width is 24 ps and the timing jitter of the pulses remains below 1 ps. (7 Refs)

Descriptors: laser cavity resonators; laser mode locking; optical fibres; semiconductor lasers

Identifiers: VCSEL module; butt-coupled fibre; compact modelocking source; electrically pumped VCSEL; external fibre optic resonator; CW threshold current; timing jitter; vertical cavity; surface emitting laser; 1.7 mA; 24 ps

Numerical Indexing: current 1.7E-03 A; time 2.4E-11 s

43/9/7 (Item 4 from file: 2)

DIALOG(R) File 2:INSPEC

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05192193 INSPEC Abstract Number: A9216-4260F-016, B9208-4320J-079

Title: A 1.54- μ m monolithic semiconductor ring laser:

CW and mode-locked operation

Author(s): Hansen, P.B.; Raybon, G.; Chien, M.-D.; Koren, U.; Miller, B.I.; Young, M.G.; Verdiell, J.-M.; Burrus, C.A.

Author Affiliation: AT&T Bell Lab., Holmdel, NJ, USA

Journal: IEEE Photonics Technology Letters vol.4, no.5 p.411-13

Publication Date: May 1992 Country of Publication: USA

CODEN: IPTLEL ISSN: 1041-1135

U.S. Copyright Clearance Center Code: 1041-1135/92/\$03.00

Language: English Document Type: Journal Paper (JP)

Treatment: Experimental (X)

Abstract: The authors have fabricated a monolithic semiconductor ring laser with a diameter of 3.0 mm. A straight tangent waveguide provides two output ports through evanescent coupling. The laser, which exhibits a threshold current of 157 mA, operates in a single longitudinal mode with a linewidth of 900 kHz at a wavelength of 1.54 μ m. The device has been actively mode-locked at the fundamental resonance frequency of 9.0 GHz, yielding 27-ps pulses with a time-bandwidth product of 0.47. Differences in the characteristics of the pulses emitted from the two output ports indicate counterpropagating pulse trains, which because of the mode-locking scheme must collide in the modulated gain section. (5 Refs)

Subfile: A B

Descriptors: laser mode locking; optical modulation; ring lasers; semiconductor junction lasers; spectral line breadth

Identifiers: IR; colliding laser pulses; diode lasers; monolithic semiconductor ring laser; mode-locked operation; straight tangent waveguide; output ports; evanescent coupling; threshold current; single longitudinal mode; linewidth; actively mode-locked; fundamental resonance frequency; time-bandwidth product; counterpropagating pulse trains; modulated gain section; 1.54 micron; 3 mm; 157 mA; 9 GHz; 27 ps

Numerical Indexing: wavelength 1.54E-06 m; size 3.0E-03 m; current 1.57E-01 A; frequency 9.0E+09 Hz; time 2.7E-11 s

43/9/8 (Item 5 from file: 2)

DIALOG(R) File 2:INSPEC

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02968187 INSPEC Abstract Number: A82114290, B83002253

Title: Optically pumped **semiconductor** platelet **lasers**

Author(s): Roxlo, C.B.; Putnam, R.S.; Salour, M.M.

Author Affiliation: MIT, Cambridge, MA, USA

Journal: Proceedings of the SPIE - The International Society for Optical Engineering vol.322 p.31-6

Publication Date: 1982 Country of Publication: USA

CODEN: PSISDG ISSN: 0277-786X

Conference Title: Picosecond Lasers and Applications

Conference Date: 26-27 Jan. 1982 Conference Location: Los Angeles, CA,

Language: English Document Type: Conference Paper (PA); Journal Paper

Treatment: Practical (P); Experimental (X)

Abstract: Tunable CW laser action of platelet **semiconductors** is reported in both mode-locked and unmode-locked configurations. The gain media are platelets of CdS, CdSe, CdSSe and InGaAsP, cooled to 85K and longitudinally pumped by argon-ion and krypton-ion **lasers**. Anti-reflection coating of the crystal face and external bandwidth restriction have been used to generate **pulses** as short as 4 ps in CdS. The **pulses** observed are chirped, with non-transform limited time-bandwidth products of about 1.7. The energy conversion efficiency is 20% into the TEM mode, with output powers of over 10 mW from n into the TEM/sub oo/ mode, with output powers of over 10 mW from CdS. **Pulses** as short as 7 ps tunable over a 26 nm range have been obtained in InGaAsP. (17 Refs)

43/9/9 (Item 6 from file: 2)

DIALOG(R) File 2:INSPEC

(c) Institution of Electrical Engineers. All rts. reserv.

02866111 INSPEC Abstract Number: A82055191, B82031013

Title: Optically pumped **semiconductor** platelet **lasers**

Author(s): Roxlo, C.B.; Putnam, R.S.; Salour, M.M.

Author Affiliation: Exxon Corporate Res. Labs., Linden, NJ, USA

Journal: IEEE Journal of Quantum Electronics vol.QE-18, no.3 p.

338-42

Publication Date: March 1982 Country of Publication: USA

CODEN: IEJQA7 ISSN: 0018-9197

Language: English Document Type: Journal Paper (JP)

Treatment: Experimental (X)

Abstract: Tunable CW laser action of platelet **semiconductors** is reported in both mode-locked and unmode-locked configurations. The gain media are platelets of CdS, CdSe, CdSSe, and InGaAsP cooled to 85K and longitudinally pumped by an argon-ion laser. Antireflection (AR) coating of the crystal face and external bandwidth restriction have been used to generate **pulses** as short as 4 ps. The **pulses** observed are chirped, with nontransform limited time-bandwidth products of about 1.7. The energy conversion efficiency is 20 percent into the TEM/sub 00/ mode, with **output** powers of over 10 mW from CdS. (21 Refs)

Identifiers: optical pumping; tunable CW laser action; mode locked configurations; CdS platelets; CdSe platelets; CdSSe platelets; InGaAsP platelets; Ar ion laser pumping; antireflection coating; pulse generation; 4 picosecond pulse generation; II-VI semiconductors; III-V semiconductors; **semiconductor** platelet **lasers**; unmode-locked configurations; gain media; longitudinally pumped; crystal face; external bandwidth restriction; chirped; nontransform limited time-bandwidth products; energy conversion efficiency; TEM/sub 00/ mode; **output** powers

43/9/10 (Item 1 from file: 8)
 DIALOG(R) File 8: Ei Compendex(R)
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 03023292 E.I. Monthly No: EIM9102-005949

Title: Single-frequency diode-pumped lasers for free-space communication.

Author: Kane, Thomas J.; Cheng, Emily A. P.; Gerstenberger, David C.; Wallace, Richard W.

Corporate Source: Lightwave Electronics Corp, Mountain View, Ca, USA

Conference Title: Free-Space Laser Communication Technologies II

Conference Location: Los Angeles, CA, USA Conference Date: 19900115

Sponsor: SPIE

Source: Proceedings of SPIE - The International Society for Optical Engineering v 1218. Publ by Int Soc for Optical Engineering, Bellingham, WA, USA. p 239-249

Publication Year: 1990

CODEN: PSISDG ISSN: 0277-786X ISBN: 0-8194-0259-1

Abstract: Laser-diode pumping of monolithic ND:YAG rings can lead to output powers of hundreds of milliwatts from a single laser. We have built several lasers with diffraction-limited single-mode output of 380 mW. These lasers can be injection-locked in a chain configuration to sum their power, while maintaining diffraction-limited, single-frequency operation. We demonstrated this chaining technique with two lasers, with a total output of 340 mW, and expect that it is practical for up to about ten lasers. Thus with lasers of 380 mW, output of 3 Watts is possible. The chaining technique, if properly engineered, results in redundancy. Monolithic, diode-pumped Nd:YAG ring lasers can provide narrow-linewidth, tunable output which is adequate for use as a local oscillator in a coherent communication system. We build a commercial laser which has a linewidth of about 2 kHz, a power of 5 milliwatts, and which is tunable over a range of 30 MHz in a few microseconds. We phase-locked one of these lasers to a second, similar laser. This demonstrates that the powerful technique of heterodyne detection is possible with a diode-pumped laser used as a local oscillator. A key to the usefulness of these lasers in space communication is modulation. We have experimented with a technique for converting the cw, infrared output of these lasers into randomly pulsed, green output useful for Pulse-Position Modulation. Energy storage in an external resonant cavity permits peak green output to be much more powerful than cw infrared input. We have also begun experimentation with techniques for phase and amplitude modulating the output of these lasers. We are taking advantage of the coherence of the output in order to reduce the voltage required for conventional electro-optic modulation. (Author abstract) 8 Refs.

Descriptors: *OPTICAL COMMUNICATION--*Space Applications; LASERS, SEMICONDUCTOR--Optical Pumping; SEMICONDUCTOR DIODES; LASERS, RING; PULSE TIME MODULATION

43/9/11 (Item 1 from file: 103)
DIALOG(R) File 103:Energy SciTec
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00970068 EDB-82-144923

Title: High peak power picosecond light pulses from
a directly modulated semiconductor laser

Author(s): Klein, H.; Bimberg, D.; Beneking, H.; Kuhl, J.; Goebel, E.O.

Affiliation: Institut fuer Halbleitertechnik und SFB 202,
Rheinisch-Westfalische Technische Hochschule Aachen, Templergraben 55,
D-5100 Aachen, Federal Republic of Germany and Institut fuer
Festkoerperphysik der T.U.Berlin, Stra e des 17. Juni 135, D-1000
Berlin 12, Federal Republic of Germany

Source: Appl. Phys. Lett. (United States) v 41:5. Coden: APPLA

Publication Date: 1 Sep 1982

p 394-396

Document Type: Journal Article; Numerical data

Language: English

Journal Announcement: EDB8208

Country of Origin: Germany, Federal Republic of

Abstract: We report the generation of short light pulses of 23-
ps duration from an unbiased proton implanted double
heterostructure cw laser by direct gain modulation.
Repetition frequencies up to 10 MHz and a typical peak
power of 300 mW are achieved. The time behavior of the light
output is largely independent of the rise and fall time of the
modulation current, since the first relaxation oscillation of the
laser is utilized.;

Major Descriptors: *SEMICONDUCTOR LASERS -- PULSES

Descriptors: ELECTRIC CURRENTS; EXPERIMENTAL DATA; GAIN;

HETEROJUNCTIONS; ION IMPLANTATION; MHZ RANGE; MODULATION; OSCILLATIONS;

POWER; PROTONS; PULSE RISE TIME; RELAXATION;

TIME DEPENDENCE; VISIBLE RADIATION

Broader Terms: AMPLIFICATION; BARYONS; CURRENTS; DATA;

TIMING PROPERTIES

L41 ANSWER 1 OF 12 HCAPLUS COPYRIGHT ACS on STN

AN 2001:656000 HCAPLUS

ED Entered STN: 07 Sep 2001

TI Cavity-augmented frequency tripling of a **continuous wave mode-locked laser**

AU McConnell, Gail; Ferguson, Allister I.; Langford, Nigel

CS Department of Physics and Applied Physics, University of Strathclyde, Glasgow, G4 0NG, UK

SO Journal of Physics D: Applied Physics (2001), 34(16), 2408-2413
CODEN: JPAPBE; ISSN: 0022-3727

PB Institute of Physics Publishing

DT Journal

LA English

AB We present a model and exptl. investigation of a singly-resonant optical cavity to enhance the nonlinear conversion efficiency of a **continuous wave mode-locked all-solid-state laser** source to produce an efficient source of UV radiation. For **input pulses of approx. 33 ps duration at 4.4 ns intervals**, our model predicts greater than 30% conversion from fundamental to third harmonic which is particularly attractive for fundamental sources of modest av. power. Exptl., we have achieved overall optical conversion efficiencies from fundamental to third harmonic wavelength typically greater than 11%, compared with less than 0.4% in a single pass geometry. We have measured an av. power of 320 mW at $\lambda = 355$ nm at picosecond pulse duration, which corresponds to a generated third harmonic av. power of 0.5 W.

RE.CNT 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Ashkin, A; IEEE J Quantum Electron 1966, V2, P109 HCAPLUS
- (2) Ghosh, G; J Appl Phys 1995, V78, P6752 HCAPLUS
- (3) Graf, T; Opt Commun 1999, V159, P84 HCAPLUS
- (4) Hansch, T; Opt Commun 1980, V35, P441 HCAPLUS
- (5) Koch, K; J Opt Soc Am B 1999, V16, P448 HCAPLUS
- (6) Persaud, M; IEEE J Quantum Electron 1990, V26, P1253 HCAPLUS
- (7) Sala, K; IEEE J Quantum Electron 1980, V16, P990
- (8) Zhang, T; IEEE J Quantum Electron 1996, V32, P127 HCAPLUS

L41 ANSWER 4 OF 12 HCAPLUS COPYRIGHT ACS on STN

AN 1997:216179 HCAPLUS
 DN 126:323026
 ED Entered STN: 03 Apr 1997
 TI Picosecond Nd:YLF laser-multipass amplifier source pumped by pulsed diodes for the operation of powerful OPOs
 AU Heinz, P.; Seilmeier, A.; Piskarskas, A.
 CS Physikalisches Inst., Univ. Bayreuth, Bayreuth, D-95440, Germany
 SO Optics Communications (1997), 136(5,6), 433-436
 CODEN: OPCOB8; ISSN: 0030-4018
 PB Elsevier
 DT Journal
 LA English
 CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
 AB Picosecond pulse trains from a quasi continuous-wave Nd:YLF oscillator are amplified by a multipass system pumped by a pulsed 100 W peak power laser diode. Gain factors in the order of 100 are achieved with input pulses of 100 nJ energy and 2 ps duration. The high power of the amplified pulse trains allows the operation of a quasi-cw synchronously pumped KTP optical parametric oscillator (OPO) at high output coupling. Pumping by the 2nd harmonic provides OPO pulses of 2.1 ps duration in trains consisting of 25 pulses with a noteworthy flat top of the envelope. The conversion efficiency of 13% corresponds to a total energy of 50 .mu.J in the trains. The parameters promise wide applications of the system in ultrafast spectroscopy.
 ST neodymium doped yttrium lithium fluoride amplifier; laser diode pumped yttrium lithium fluoride; potassium titanyl phosphate optical parametric oscillator
 IT Optical parametric oscillators
 Solid state lasers
 (diode-pumped Nd:YLF multipass amplifier for operation of powerful KTP optical parametric oscillator)
 IT Second-harmonic generation
 (frequency doubled diode-pumped Nd:YLF multipass amplifier for operation of powerful KTP optical parametric oscillator)
 IT Laser radiation
 (pulsed; frequency doubled diode-pumped Nd:YLF multipass amplifier for operation of powerful KTP optical parametric oscillator)
 IT 12690-20-9, Potassium titanyl phosphate 23108-36-3, YLF
 RL: DEV (Device component use); USES (Uses)
 (diode-pumped Nd:YLF multipass amplifier for operation of powerful KTP optical parametric oscillator)
 IT 7440-00-8, Neodymium, uses
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
 (diode-pumped Nd:YLF multipass amplifier for operation of powerful KTP optical parametric oscillator)

L56 ANSWER 8 OF 14 HCAPLUS COPYRIGHT ACS on STN

AN 1986:78776 HCAPLUS
DN 104:78776
ED Entered STN: 08 Mar 1986
TI Spectral and temporal study of picosecond-pulse propagation in a single-mode optical fiber
AU Gomes, A. S. L.; Sibbett, W.; Taylor, J. R.
CS Blackett Lab., Imp. Coll., London, SW7 2BZ, UK
SO Applied Physics B: Photophysics and Laser Chemistry (1986), B39(1), 43-46
CODEN: APPCDL; ISSN: 0721-7269
DT Journal
LA English
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB The power-dependent pulsewidth variations for input 85 ps pulses from a continuous wave mode-locked Nd:YAG laser propagating through 125 m of single-mode optical fiber were examd. using a Synchroscan streak camera. Simultaneous spectral and temporal measurements provided information as to the optimum parameters for pulse compression in fibers.
ST laser pulse propagation fiber optics
IT Laser radiation
(pulsed, ps, in single-mode optical fiber)
IT Fiber optics
(single-mode, laser ps pulse propagation in)
IT Cameras
(streak, laser ps pulse propagation in single-mode optical fiber examd. by Synchroscan)

L64 ANSWER 2 OF 2 HCAPLUS COPYRIGHT ACS on STN
AN 2000:377720 HCAPLUS
DN 133:96259
ED Entered STN: 07 Jun 2000
TI Time-resolved transport in conjugated polymers
AU Pinner, D. J.; Friend, R. H.; Tessler, N.
CS Cambridge Laboratory, University of Cambridge, Cambridge, CB3 0HE, UK
SO Synthetic Metals (2000), 111-112, 257-261
CODEN: SYMEDZ; ISSN: 0379-6779
PB Elsevier Science S.A.
DT Journal
LA English
CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 36, 76
AB The authors present a range of measurement techniques (time-resolved and CW) of various polymers in a variety of LED configurations. Using time-resolved pulsed elec. excitation, the authors are able to provide direct evidence for the motion of both types of carriers. The authors use pulses to probe the decay of carriers on time scales from nanosecond to millisecond. The authors address the issue of pulsed vs. Continuous-wave properties and find that the functional form (power law) of the current-voltage curves is affected by the measurement technique; the authors also discuss a method to produce intrinsic curves. The authors introduce the method of using double elec. pulses to probe the dynamics of the stored charges after the application of a pulse.

63/9/5 (Item 1 from file: 23)

DIALOG(R) File 23:CSA Technology Research Database

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0005934054 IP ACCESSION NO: A00-35305

Mass modeling for electrically powered space-based Yb:YAG lasers

Fitzgerald, Kevin F; Leshner, Richard B; Winsor, Harry V

Analytic Services, Inc., Arlington, VA [Fitzgerald

PAGES: 251-262

PUBLICATION DATE: 2000

PUBLISHER: Bellingham, WA: Society of Photo-Optical Instrumentation
Engineers (SPIE Proceedings. Vol. 3931)

CONFERENCE:

Gas, chemical, and electrical lasers and intense beam control and
applications; Proceedings of the Conference, San Jose, CA, UNITED STATES,
24-25 Jan. 2000

DOCUMENT TYPE: Conference Paper

ABSTRACT:

An estimate for the mass of a nominal high-energy laser system envisioned for space applications is presented. The approach features a diode pumped solid state laser (DPSSL) based on the Yb:YAG system with 10 MW average output power, and periods of up to 100 sec CW full-power operation without refueling. The system is powered by Li-ion batteries recharged by a solar array. The power requirements for this system dominate over any fixed structural features, so the critical issues in scaling a DPSSL to high power are made transparent. When based on currently available space-qualified batteries, the design mass is about 500 metric tons. Therefore, innovations are required before high power electrical lasers will be serious contenders for use in space systems. The necessary innovations must improve the rate at which Li-ion batteries output power. This analysis also finds that heating of the solid state lasing material, cooling of the diode pump lasers and duty cycle are critical issues. Features dominating the thermal control requirements are the heat capacity of garnet, the operational temperature range of the system, and the required cooling time between periods of full operation. The duty cycle is a critical factor in determining both the mass of the diode array needed, and the mass of the power supply system. (Author)

DESCRIPTORS: *Spaceborne lasers; *Electric power; *Laser
outputs; *Yag lasers; *Ytterbium; *High power lasers;
Solid state lasers; Mathematical models; Mass distribution;
Diodes

SUBJ CATG: 36, LASERS AND MASERS

63/9/6 (Item 2 from file: 23)
DIALOG(R) File 23:CSA Technology Research Database
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0004407249 IP ACCESSION NO: N93-15685
Picosecond optical mixing in photorefractive materials (Final Report, 1991-1992)

MCCARTNEY, C A
Naval Academy, Annapolis, MD.
PUBLICATION DATE: 1992

CONFERENCE:
, UNITED STATES

DOCUMENT TYPE: Report
RECORD TYPE: Abstract
LANGUAGE: ENGLISH
REPORT NO: AD-A256824; USNA-TSPR-189
NOTES: CASI HC A04/MF A01; Available from CASI HC A04/MF A01
FILE SEGMENT: Aerospace & High Technology

ABSTRACT:

The interaction of laser light in a photorefractive crystal can form a grating that holds promise as a future means of information storage and optical processing. The goal of the project was to examine grating formation when the laser light consists of pulses of a few picoseconds duration and make a comparison with continuous wave laser light. Toward this end, a device called an optical autocorrelator was constructed to measure the duration of the ultrashort pulses, as they are too brief to be measured by conventional electronic means. Two measurable consequences of the photorefractive effect were examined: beam fanning and self-pumped phase conjugation. Significant differences between pulsed and continuous wave input were noted, and insight into self pumped phase conjugation was gained. The results indicate the response of photorefractive crystals to ultrashort laser pulses remains an attractive item of study. (GRA)

DESCRIPTORS: *Continuous wave lasers; *Laser beams;
*Laser outputs; *Optical data storage materials; *Optical materials
; *Pulsed lasers; *Refraction; Continuous radiation; Crystals;
Light beams; Nonlinear systems; Optical memory (data storage); Phase
conjugation
SUBJ CATG: 36, LASERS AND MASERS

63/9/8 (Item 2 from file: 2)

DIALOG(R) File 2:INSPEC

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06101745 INSPEC Abstract Number: A9524-4255R-003, B9512-4320G-021

Title: Diode pumped Nd/sup 3+/:GdVO/sub 4/ laser with fibre input

Author(s): Vlasenko, O.A.; Zavartsev, Y.D.; Zagumennyi, A.I.; Kozlov, V.A.; Studenikin, P.A.; Ter-Mikirtychev, V.V.; Shcherbakov, I.A.

Author Affiliation: Inst. of Gen. Phys., Acad. of Sci., Moscow, Russia

Journal: Kvantovaya Elektronika, Moskva vol.25, no.8 p.788-90

PUBLICATION DATE: Aug. 1995 Country of Publication: Russia

CODEN: KVEKA3 ISSN: 0368-7147

Translated in: Quantum Electronics vol.25, no.8 p.758-9

PUBLICATION DATE: Aug. 1995 Country of Publication: UK

CODEN: QUELEZ ISSN: 1063-7818

Language: English Document Type: Journal Paper (JP)

Treatment: Experimental (X)

ABSTRACT: A single-mode Nd/sup 3+/:GdVO/sub 4/ laser (lambda =1.06 mu m) with diode pumping (lambda =10.81 mu m) and fibre input was constructed. It could be operated in the cw regime and in a regime of passive Q switching of the cavity. A technology was developed for coupling the radiation of laser diodes into fibre waveguides with an efficiency up to 93%. Without focusing of the pump radiation (of 175 mW power), the output power and the lasing threshold obtained for a hemispherical cavity 10 cm long were 38 and 15 mW, respectively. When the laser was passively Q switched by an LiF:F/sub 2//sup -/ crystal, the output was pulse-periodic: the pulse duration was 15-100 ns, the repetition frequency was 5-200 kHz, and the peak power was 10 W. (3 Refs)

Subfile: A B

Descriptors: gadolinium compounds; laser cavity resonators; laser modes; laser transitions; neodymium; optical fibres; optical pumping; Q-switching; solid lasers

63/9/9 (Item 3 from file: 2)

DIALOG(R) File 2:INSPEC

(c) Institution of Electrical Engineers. All rts. reserv.

05403995 INSPEC Abstract Number: A9312-4255P-011, B9306-4320J-081

Title: Multisection travelling wave semiconductor laser amplifiers:
analysis and optimisation

Author(s): Paradisi, A.; Goano, M.; Montrosset, I.

Author Affiliation: Dipartimento di Elettronica, Politecnico di Torino,
Italy

Journal: Proceedings of the SPIE - The International Society for Optical
Engineering vol.1787 p.164-73

PUBLICATION DATE: 1992 Country of Publication: USA

CODEN: PSISDG ISSN: 0277-786X

U.S. Copyright Clearance Center Code: 0 8194 0966 9/92/\$4.00

Conference Title: Multigigabit Fiber Communications

Conference Sponsor: SPIE

Conference Date: 8-9 Sept. 1992 Conference Location: Boston, MA, USA

Language: English Document Type: Conference Paper (PA); Journal Paper
(JP)

Treatment: Theoretical (T)

ABSTRACT: With respect to homogeneously pumped laser amplifiers, multi-section structures for travelling wave amplifiers (MS-TWA) seem to be attractive from the point of view of both the adjustable parameters (electrical pumping of each section) and the device performances in terms of gain saturation characteristics and four-wave mixing. The authors consider the possibility of optimising 1.55 μm MS-TWA with respect to the length and the electrical injection level of each homogeneously pumped region and to the input signal wavelength. The optimisation is accomplished by taking into account the continuous-wave gain-output power characteristics and the thermal effects within the device. The analysis of the transient behavior shows that optical input pulses can undergo considerable amplitude distortion, if the amplifier is not properly designed. (18 Refs)

63/9/14 (Item 1 from file: 8)

DIALOG(R) File 8: Ei Compendex(R)

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06267015 E.I. No: EIP03027316544

Title: Effect of nonlinear index evolution into EDFAs on ultra-short pulse propagation

Author: Poti, Luca; Bogoni, Antonella

Corporate Source: CNIT Photonics Network Nat'l Lab, 56124 Pisa, Italy

Conference Title: 2002 IEEE/LEOS Annual Meeting Conference Proceedings: 15th Annual Meeting of the IEEE Lasers and Electro-Optics Society

Conference Location: Glasgow, United Kingdom Conference Date: 20021110-20021114

Sponsor: IEEE

E.I. Conference No.: 60523

Source: Conference Proceedings - Lasers and Electro-Optics Society Annual Meeting-LEOS v 2 2002. p 434-435

PUBLICATION YEAR: 2002

CODEN: CPLSE4 ISSN: 1092-8081

Language: English

Document Type: CA; (Conference Article) Treatment: T; (Theoretical)

Journal Announcement: 0301W3

ABSTRACT: The relationship between the nonlinear doped fiber coefficient and the population inversion was examined. It was found that as the pulse becomes shorter and powerful, the shape distortion increase. For a 4 ps pulse with an input mean power of -20 dBm, an error of more than 15% was calculated. (Edited abstract) 5 Refs.

Descriptors: *Fiber lasers; Nonlinear optics; Ultrashort pulses; Light propagation; Optical fibers; Continuous wave lasers; Laser beams; Refractive index; Light absorption; Light emission; Optical Kerr effect; Mathematical transformations; Mathematical models

63/9/19 (Item 3 from file: 34)

DIALOG(R) File 34:SciSearch(R) Cited Ref Sci
(c) Inst for Sci Info. All rts. reserv.

00812072 Genuine Article#: EY439 Number of References: 24

Title: GAIN SATURATION CHARACTERISTICS OF TRAVELING-WAVE SEMICONDUCTOR-
LASER AMPLIFIERS IN SHORT OPTICAL PULSE AMPLIFICATION

Author(s): SAITOH T; MUKAI T

Corporate Source: NIPPON TELEGRAPH & TEL PUBL CORP, MUSASHINO ELECT COMMUN
LAB, BASIC RES LABS/MUSASHINO/TOKYO 180/JAPAN/

Journal: IEEE JOURNAL OF QUANTUM ELECTRONICS, 1990, V26, N12, P2086-2094

Language: ENGLISH Document Type: ARTICLE

Geographic Location: JAPAN

Subfile: SciSearch; CC PHYS--Current Contents, Physical, Chemical & Earth
Sciences; CC ENGI--Current Contents, Engineering, Technology & Applied
Sciences

Journal Subject Category: ENGINEERING, ELECTRICAL & ELECTRONIC; PHYSICS,
APPLIED

ABSTRACT: The gain saturation characteristics of traveling-wave semiconductor laser amplifiers (TWA's) are theoretically and experimentally investigated. In the amplification of an isolated pulse whose repetition period is short compared to the carrier lifetime, the gain saturation is related through the carrier lifetime to the gain saturation in CW amplification. The saturation energy is given as the output pulse energy at which the pulse energy gain is reduced by 2.35 dB from the unsaturated value, while the signal gain in CW amplification is decreased by 4.34 dB from the unsaturated value when the output signal intensity is equal to the saturation intensity. When the output pulse energy is smaller than the saturation energy, short optical pulses can be amplified without pulse shape distortion, whereas high-energy pulses suffer from pulse shape distortion due to the temporal gain variation during the pulse duration. FWHM pulse duration variation in amplification by TWA's depends on the input pulse shape. The pulse energy gain saturation is experimentally confirmed to be independent of pulse durations and to be determined only by the pulse energy. When the pulse repetition period becomes comparable to or smaller than the carrier lifetime, the initial gain becomes smaller than the unsaturated gain value. In extremely high repetition rate pulse amplification, the saturation of the pulse energy gain is determined by the average signal power. If the input pulse energy and the repetition rate are suitably designed, TWA's can amplify ultrahigh-speed signals because they have a wide gain bandwidth.

Identifiers--KeyWords Plus: FM QUANTUM NOISE; FIBER TRANSMISSION;
SUBPICOSECOND; COMPRESSION; AM

63/9/20 (Item 1 from file: 35)
 DIALOG(R) File 35:Dissertation Abs Online
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01125159 ORDER NO: AAD90-30891
 SEMICONDUCTOR LASER ARRAY-PUMPED, NEODYMIUM GLASS, MODELOCKED
 LASER OSCILLATOR AND REGENERATIVE AMPLIFIER
 Author: DIMMICK, TIMOTHY EUGENE
 Degree: PH.D.
 Year: 1990
 Corporate Source/Institution: UNIVERSITY OF MARYLAND (0117)
 Director: PING-TONG HO
 Source: VOLUME 51/05-B OF DISSERTATION ABSTRACTS INTERNATIONAL.
 PAGE 2520. 129 PAGES
 Descriptors: ENGINEERING, ELECTRONICS AND ELECTRICAL; PHYSICS, OPTICS
 Descriptor Codes: 0544; 0752

A semiconductor-laser-array-pumped cw modelocked Nd:glass laser oscillator and regenerative amplifier system is described. The difficulties associated with semiconductor laser pumping of Nd:glass are discussed. Pump beam shaping techniques are presented which reduce thermally induced distortions of the lasing mode within the Nd:glass gain medium. A resonator design is presented which allows the use of low f# pump beam focusing optics yet provides excellent immunity to thermal lensing within the Nd:glass. The effect of thermal lensing on the resonator mode is studied. The output versus input power relation for the oscillator is derived. From measurements of the laser threshold versus the output coupler reflectivity, the parasitic resonator loss, unsaturated gain as a function of pump power and the optimum output coupler reflectivity are determined. Measurements of the effect of intracavity etalons on the cw lasing spectrum as well as the absence of cavity beat notes over a wide frequency range indicate that gain broadening over the band widths considered is predominantly homogeneous. Good agreement is found between theory and experiment assuming a homogeneously broadened line. The cw modelocked Nd:glass laser oscillator produced optical pulses ranging from 20 to 90 ps in width at average powers of 20 to 50 mW.

The design and operation of the semiconductor laser array pumped Nd:glass regenerative amplifier is presented. Techniques for measurement of the time dependent resonator transmission as well as the output pulse energy are described. The amplifier's performance is consistent with predictions based on published theory and measured parameters. The regenerative amplifier, when used in conjunction with the modelocked oscillator, provided an energy amplification greater than 50 dB producing 4.7 μJ , 77 kW peak power pulses at a repetition rate of 355 Hz. This represents the largest peak power obtained to date from a semiconductor laser pumped laser system and was accomplished with an average electrical power consumption by the pump lasers of less than 8 W.

Several ideas are presented to enhance the systems performance including methods for compressing the pulse width and for increasing the amplified pulse energy.

83/9/1 (Item 1 from file: 350)

DIALOG(R) File 350:Derwent WPIX (c) Thomson Derwent. All rts. reserv.
013290974 WPI Acc No: 2000-462909/200040 XRPX Acc No: N00-345214

Heavy-pulse generator

Patent Assignee: ENERGOSERVIS RES PRODN CENTRE CO LTD (ENER-R)

Inventor: BERNIKOV A S; DMITRIEV I K

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
RU 2138905	C1	19990927	RU 96124719	A	19961225	200040 B

Priority Applications (No Type Date): RU 96124719 A 19961225

Abstract (Basic): RU 2138905 C1

NOVELTY - Device has rectifying bridge, clipping resistor, which resistance conforms to condition of clipping charging current of accumulation capacitor for quarter of mains voltage half-wave. Its inductance conforms to condition of protection against high harmonic frequencies caused by excitation of oscillator circuit, which comprises accumulation capacitor, which is connected to dipole winding and cathode of isolation diode. Second terminal of dipole winding is connected to anode of switching transistor, which cathode is connected to another terminal of accumulation capacitor and negative terminal of rectifying bridge. This provides common line for control pulse generator, which is designed using two-base diode which is synchronously controlled through two electrodes according initial conditions provided by circuits of threshold stabilization and clock cycle. Base 2 is supplied with voltage which provides threshold through accumulating resistor which is connected to common point of cathode of stabilizing diode of circuit for stabilization of threshold voltage and its current -clipping resistor, which second terminal is connected to cathode of isolation diode and clock pulses with current-clipping resistor, circuit for stabilization of increment rate of threshold voltage. Second terminal of latter circuit is connected to anode of isolation diode which protects clock pulses from clearing by voltage of accumulation capacitor charge. Emitter is supplied with voltage which is generated by control capacitor through resistors which define working frequency, and are switched by setting switch, which is connected to middle point of divider, which one terminal is connected to common line and anode of stabilizing diode of threshold voltage increment rate stabilization circuit. Second terminal is connected to its cathode and common point of base 2 with current-clipping resistor of threshold voltage increment rate stabilization circuit. Base 1 which is connected to common line through matching resistor serves as output of control pulse generator and is connected to control electrode of switching thyristor, which drives oscillator circuit in order to convert power which is accumulated in capacitor into actuating device work through its winding.

USE - Power supply for laser equipment, medical devices, power supply, preferably for conversion of alternating current mains voltage to single pulses which frequency is multiple with respect to mains frequency.

ADVANTAGE - Increased efficiency.

83/9/3 (Item 1 from file: 23)

DIALOG(R) File 23:CSA Technology Research Database

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0005903231 IP ACCESSION NO: A00-39507

High-power AlGaInAs/GaAs microstack laser bars

Hanke, C; Korte, L; Acklin, B; Behringer, M; Hermann, G; Luft, J; De
Odorico, B; Marchiano, M; Wilhelmi, J

Infineon Technologies, Munich, Germany [Hanke

PAGES: 50-57

PUBLICATION DATE: 2000

PUBLISHER: Bellingham, WA: Society of Photo-Optical Instrumentation
Engineers (SPIE Proceedings. Vol. 3947)

CONFERENCE:

In-plane semiconductor lasers IV; Proceedings of the Meeting, San Jose, CA,
24-25 Jan. 2000

LANGUAGE: ENGLISH

ABSTRACT:

We realized microstack lasers with two and three active zones for the 800 nm and 900 nm band in the InGaAlAs/GaAs system using conventional LOC-SCH structures. Compared to reference lasers with only one laser active structure, a slight increase in threshold current can be observed, which is attributed to an increased current spreading due to the highly conducting tunnel junction. The I/V characteristics show turn-on voltages corresponding to the number of active layers, and there is no significant additional potential barrier due to the tunnel-junctions detectable. The differential efficiency scales with the number of laser junctions. AR/HR coated lasers with two or three junctions show efficiencies at 800 nm of 2.2 W/A and 3.1 W/A, respectively. Mounted 1-cm laser bars with an asymmetrically coated double microstack-structure have been operated up to 95 W cw and 240 W qcw with 20 percent duty cycle. Due to the high slope efficiency (2.1 W/A) and the low series resistance, the wallplug efficiency exceeds 50 percent. qcw-lifetests at 210 W with 20 percent duty cycle showed only small degradation up to 5 Gshot. (Author)

DESCRIPTORS: *Semiconductor lasers; *Laser arrays; *Indium
arsenides; *Aluminum gallium arsenide lasers; *High
power lasers; Volt-ampere characteristics; Tunnel
junctions; Near fields; Laser outputs

SUBJ CATG: 36, LASERS AND MASERS

83/9/4 (Item 1 from file: 2)

DIALOG(R) File 2:INSPEC

(c) Institution of Electrical Engineers. All rts. reserv.

08415201 INSPEC Abstract Number: A2002-23-4255P-017, B2002-11-4320J-098

Title: Quantum dots for VCSEL applications at $\lambda = 1.3 \mu\text{m}$

Author(s): Ledentsov, N.; Bimberg, D.; Ustinov, V.M.; Alferov, Zh.I.;

Author Affiliation: Inst. fur Festkorperphys., Technische Univ. Berlin,

Journal: Physica E Conference Title: Physica E (Netherlands) vol.13,
no.2-4 p.871-5

Publisher: Elsevier,

PUBLICATION DATE: March 2002 Country of Publication: Netherlands

CODEN: PELNFM ISSN: 1386-9477

SICI: 1386-9477(200203)13:2/4L.871:QDVA;1-A

Material Identity Number: G387-2002-004

U.S. Copyright Clearance Center Code: 1386-9477/02/\$22.00

Conference Title: Tenth International Conference on Modulated
Semiconductor Structures. MSS 10

Conference Sponsor: Johannes Kepler Univ.; Federal Ministr. Educ., Sci. &
Culture; Govern. Province of Upper Austria

Conference Date: 23-27 July 2001 Conference Location: Linz, Austria

Document Number: S1386-9477(02)00223-0

Language: English Document Type: Conference Paper (PA); Journal Paper

Treatment: Experimental (X)

ABSTRACT: GaAs-based vertical cavity surface-emitting lasers (VCSELs) using self-organized quantum dots (QDs) emitting at $1.3 \mu\text{m}$ demonstrate device-acceptable parameters. Threshold currents below 2 mA, operation voltage below 2 V and differential efficiency in excess of 60% are demonstrated. Maximum CW output power of 0.8 mW is realized for $8 \mu\text{m}$ oxide-confined aperture device. Using fully oxidized top and bottom distributed Bragg reflectors allows reducing the total thickness of the structure to only 5-6 μm . Lifetime and temperature cycling tests confirm high reliability of the device. Confinement of nonequilibrium carriers in the QDs facilitates applications in VCSEL arrays with ultrasmall apertures and microcavities. Low homogeneous line width in single QDs makes potentially possible realization of single QD VCSELs. (15 Refs)

83/9/5 (Item 2 from file: 2)

DIALOG(R) File 2:INSPEC

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08020904 INSPEC Abstract Number: A2001-19-4255P-027, B2001-10-4320J-028

Title: Quasi RT-CW operation of InGaAs /InGaAsP strained quantum well lasers

Author(s): Chen, J.X.; Li, A.Z.; Chen, Y.Q.; Guo, F.M.; Lin, C.

Author Affiliation: Inst. of Metall., Acad. Sinica, Shanghai, China

Journal: Journal of Crystal Growth Conference Title: J. Cryst. Growth
(Netherlands) vol.227-228 p.338-42

Publisher: Elsevier,

PUBLICATION DATE: July 2001 Country of Publication: Netherlands

CODEN: JCRGAE ISSN: 0022-0248

Conference Title: Molecular Beam Epitaxy 2000. Eleventh International
Conference on Molecular Beam Epitaxy

Conference Date: 11-15 Sept. 2000 Conference Location: Beijing, China

Document Number: S0022-0248(01)00717-5

Language: English Document Type: Conference Paper (PA); Journal Paper

ABSTRACT: Lasers with emission wavelength of 1.8-2.1 μm offer many important applications to laser spectroscopy, eye-safe medical care and trace chemical detection. Strained InGaAs/InGaAsP structures on InP substrates have been reported as an alternative approach for the development of semiconductor laser diodes in the spectral range 1.8-2.1 μm due to the superior InP substrate quality and mature processing technology. In this paper we report the fabrication and performances of InGaAs/InGaAsP/InP strained quantum well lasers grown by gas source molecular beam epitaxy. The diodes show good I-V characteristics and the typical turn-on voltage at room temperature is around 0.4-0.5 V. A threshold current of about 120 mA is achieved for a chip with 500 μm cavity length and 4.5 μm stripe width. The maximum output power with 10% duty cycle is 18 mW. The main peak of the laser spectrum is located at 1.84 μm . (5 Refs)

104/9/2 (Item 2 from file: 23)

DIALOG(R) File 23:CSA Technology Research Database

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0005103649 IP ACCESSION NO: 0239849

Compression of pulses generated by an electroabsorption modulator at 10 GHz

Chernikov, S V; Guy, M J; Taylor, J R; Moodie, D G; Kashyap, R
Imperial Coll, London, Engl

CONF PROC LASER ELECTR OPTIC SOC ANNU MEET, 11, 1996

PUBLICATION DATE: 1996

PUBLISHER: IEEE, PISCATAWAY, NJ, (USA)

CONFERENCE:

The 1996 Conference on Lasers and Electro-Optics, CLEO'96, Anaheim, CA, USA
, 02-07 June 1996

DOCUMENT TYPE: Conference Paper; Journal Article

RECORD TYPE: Abstract

LANGUAGE: English

FILE SEGMENT: Solid State & Superconductivity Abstracts

ABSTRACT:

For optical multiplexing and demultiplexing in ultrahigh-bit-rate optical time-division-multiplexed systems as well as optical processing, there is a demand for sources of short pulses with low duty cycles.

The implementation of direct modulation techniques based on high-speed modulators like the electroabsorption modulator (EAM) is practically very attractive, but with a single-pass modulator it is difficult to generate the low duty cycles required. So far, 6.3-ps pulses at 10 GHz with a 6% duty cycle have been achieved using an EAM in conjunction with chirp compensation. This paper demonstrate the application of linear and nonlinear techniques in order to further compress pulses generated by an EAM.

DESCRIPTORS: Semiconductor lasers; Distributed feedback lasers;
Continuous wave lasers; Lithium compounds; Current
voltage characteristics; Electric delay lines; Optical fibers

104/9/3 (Item 3 from file: 23)
DIALOG(R) File 23:CSA Technology Research Database
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0003002384 IP ACCESSION NO: 1340126; 1340126
High-speed photodetectors using GaAs MESFET.

Umeda, T; Cho, Y
Inst. Sci. and Ind. Res., Osaka Univ., Ibaraki 567, Japan

ELECTRON. COMMUN. JAPAN., pt. 2, v 69, n 1, p 83-90, 1986
PUBLICATION DATE: 1986

DOCUMENT TYPE: Journal Article
RECORD TYPE: Abstract
LANGUAGE: English
FILE SEGMENT: Electronics & Communications Abstracts; Solid State &
Superconductivity Abstracts

ABSTRACT:

This paper deals with experimental investigations of light response performance and operation mechanisms of the GaAs MESFET when used as a high-speed photodetector. The GaAs MESFET under test is a device used for a microwave amplifier with 1- μ m gate length and 75 similar to 300- μ m gate width. The illuminating light is either CW (He -Ne) or **pulsed** (dye laser with 10-psec pulse width and 7-nsec pulse interval). The light is focused by the object lens and illuminates the area between the source and drain within 5 μ m. When the FET is in the pinchoff state the **pulse** response is shown to be much improved. The output current depends on the input light power and tends to saturation. Light response speed of 100 psec can be obtained from a sample with 75- μ m gate width.

DESCRIPTORS: Gallium arsenide; Mesfet; Transistors; Field effect transistors; Photodetectors; **Current voltage**
SUBJ CATG: S SMED2.10, TRANSISTORS; S SSP7.3, CONDUCTION IN SOLIDS; E ED10.3, JUNCTION PHOTODEVICES; E ED19.5, FIELD EFFECT/MOS/UNIPOLAR/THIN FILM TRANSISTORS; S SMED2.10, TRANSISTORS; S SSP7.3, CONDUCTION IN SOLIDS; E ED10.3, JUNCTION PHOTODEVICES; E ED19.5, FIELD EFFECT/MOS/UNIPOLAR/THIN FILM TRANSISTORS

17/9/5 (Item 1 from file: 104)

DIALOG(R) File 104:AeroBase

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0000182293

TITLE: Amplitude and Temporal Jitter Associated with the NPS Active
Mode-Locked Sigma Laser

AUTHORS:

Anderson, James A.,

PUBLICATION DATE: Jun 2000

LANGUAGE: English

ORIG REPORT NO: AD-A380302

ABSTRACT:

Electro-optic techniques for analog-to-digital conversion (ADC) are being developed for wideband signal collection and analysis. They have the capability of being used for direct signal reception and ADC at an antenna. A fundamental requirement for these designs is a high-frequency optical pulse train with uniform amplitude and pulse spacing. A mode-locked fiber laser can provide pulse rates and pulse widths suitable for these high bandwidth applications. In this thesis an accurate method for calculating and characterizing with the amplitude and timing jitters of the NPS active mode-locked sigma laser was designed and demonstrated. The method utilizes a wide bandwidth photodetector and a microwave spectrum analyzer to obtain data for analysis. Labview 4.0 software was used to extract and store the data displayed on the spectrum analyzer. Matlab 5.1 software was then used to analyze the Labview data and to perform calculations for the amplitude and temporal jitter. Measurements were made for a microwave sweep oscillator and a ~~CW~~ generator, then again with the fiber laser operating with each signal source. Final measurements were taken with variable laser diode pump powers by varying the controller currents. Results show that the calculation of the laser jitter is not dependent on the upper limit of the noise power integral calculation above 10 kHz; however, the jitter is highly dependent on the value of the lower frequency limit and decreases dramatically as the lower limit is increased. Laser amplitude jitter was found to decrease by 30% and timing jitter by 0.85 Ps when the laser was operated with the CW generator instead of the sweep oscillator. Also, it was found that as pump power was increased, laser timing jitter decreased. (DTIC)

DESCRIPTORS:

MAJOR DESCR: ELECTRO-OPTICS; SEMICONDUCTOR LASERS; SPECTRUM

ANALYSIS; VIBRATION; CONTINUOUS RADIATION; FIBER LASERS; AMPLITUDE

MODULATION; MICROWAVE OSCILLATORS

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104/9/5 (Item 2 from file: 2)

DIALOG(R) File 2:INSPEC

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06707625 INSPEC Abstract Number: B9711-3240G-006

Title: Fast NbN superconducting switch controlled by optical radiation

Author(s): Zorin, M.; Milostnaya, I.; Gol'tsman, G.N.; Gershenzon, E.M.

Author Affiliation: Moscow State Pedagogical Univ., Russia

Journal: IEEE Transactions on Applied Superconductivity

Conference Title: IEEE Trans. Appl. Supercond. (USA) vol.7, no.2, pt.3
p.3734-7

Publisher: IEEE,

PUBLICATION DATE: June 1997 **Country of Publication:** USA

CODEN: ITASE9 **ISSN:** 1051-8223

SICI: 1051-8223(199706)7:2:3L.3734:FSSC;1-1

Material Identity Number: 0646-97005

U.S. Copyright Clearance Center Code: 1051-8223/97/\$10.00

Conference Title: 1996 Applied Superconductivity Conference

Conference Sponsor: Northrop Grumman Sci. & Technol. Center; Westinghouse
Sci. & Technol. Center; et al

Conference Date: 25-30 Aug. 1996 **Conference Location:** Pittsburgh, PA,

Language: English **Document Type:** Conference Paper (PA); Journal Paper

Treatment: Experimental (X)

ABSTRACT: The switching time and the optical control power of the NbN superconducting switch have been measured. The device is based on the ultrathin film 5-8 nm thick patterned as a structure of several narrow parallel strips (~1 μ m wide) connected to wide current leads. The current-voltage characteristic of the switch at temperature 4.2 K demonstrated a hysteresis due to DC current self-heating. We studied the superconducting-to-resistive state transition induced by both optical and bias-current excitations. The optical pulse duration was ~20 ps and the rise time of the current step was determined to be less than 50 ps. The optical pulse was delivered to the switch by the semiconductor laser through an optical fiber. We found that the measured switching time is less than the duration of the optical excitation. The threshold optical power density does not exceed 3.10/sup 3/ W/cm/sup 2/. The proposed device can be used in the fiber input of LTS rapid single flux quantum circuits. (16 Refs)

104/9/6 (Item 3 from file: 2)

DIALOG(R) File 2:INSPEC

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06705587 INSPEC Abstract Number: B9711-4260D-026

Title: Light-emitting diodes for the 1.7-2.4 μ m wavelengths

Author(s): Popov, A.A.; Sherstnev, V.V.; Yakovlev, Y.P.

Author Affiliation: IBSG, St. Petersburg, Russia

Journal: Proceedings of the SPIE - The International Society for Optical Engineering Conference Title: Proc. SPIE - Int. Soc. Opt. Eng. (USA) vol.3002 p.132-40

Publisher: SPIE-Int. Soc. Opt. Eng,

PUBLICATION DATE: 1997 Country of Publication: USA

CODEN: PSISDG ISSN: 0277-786X

SICI: 0277-786X(1997)3002L:132:LED1;1-7

Material Identity Number: C574-97127

U.S. Copyright Clearance Center Code: 0277-786X/97/\$10.00

Conference Title: Light-Emitting Diodes: Research, Manufacturing, and Applications

Conference Sponsor: SPIE

Conference Date: 13-14 Feb. 1997 Conference Location: San Jose, CA,

Language: English Document Type: Conference Paper (PA); Journal Paper

Treatment: Experimental (X)

ABSTRACT: The basic parameters of GaInAsSb mid-IR light emitting diodes designed for spectroscopic applications were shown. Two types of room temperature devices were presented: diodes for fixed emission wavelengths between 1.7 and 2.4 μ m wavelengths and diodes tuned by drive current over wide wavelength range of 2.1-2.6 μ m. The diodes were investigated for both continuous wave (CW) and pulse operation. The current-voltage characteristics, emission spectra, beam divergence, temperature shift of the emission band were presented and discussed. To find higher performance the output power was investigated versus pulse widths and repetition rates. It was reported that the GaInAsSb LED power was improved up to 2-3 times to the values as high as 3.7 mW CW and 82 mW pulse at $\lambda = 1.94 \mu$ m as an example. It is shown that room-temperature operation, low electric power consumption, reduced cost and easy routine execution are the advantages to LEDs in comparison with spectrometers based on a diode lasers and thermal emitters. Sensitive and selective apparatuses for pollution detection, medicine and process control in the 1.7-2.4 μ m wavelength range can be built on base of these LEDs as a source of radiation. (13 Refs)

Descriptors: gallium arsenide; gallium compounds; III-V semiconductors; indium compounds; infrared sources; light emitting diodes

Identifiers: light-emitting diodes; GaInAsSb mid-IR light emitting diodes design; spectroscopic applications; room temperature devices; fixed emission wavelengths; continuous wave; pulse operation; current-voltage characteristics

104/9/7 (Item 4 from file: 2)

DIALOG(R) File 2:INSPEC

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05995670 INSPEC Abstract Number: A9515-4255P-013, B9508-4320J-069

Title: Resonant tunneling injection quantum-well **lasers**

Author(s): Lutz, C.R., Jr.; Agahi, F.; Lau, K.M.

Author Affiliation: Dept. of Electr. & Comput. Eng., Massachusetts Univ., Amherst, MA, USA

Journal: IEEE Photonics Technology Letters vol.7, no.6 p.596-8

PUBLICATION DATE: June 1995 Country of Publication: USA

CODEN: IPTLEL ISSN: 1041-1135

U.S. Copyright Clearance Center Code: 1041-1135/95/\$04.00

Language: English Document Type: Journal Paper (JP)

Treatment: Practical (P); Experimental (X)

ABSTRACT: We report, for the first time, the observation of resonant tunneling induced negative differential characteristics in the light-current (L-I) and light-voltage (L-V) **curves** of a single-quantum-well semiconductor **laser**. Broad-stripe **lasers** have exhibited CW threshold current density of 50 A/cm/sup 2/ at 77 K, with a sharp decrease in output light power at 68 A/cm/sup 2/, which corresponds to a resonant point in the **current-voltage** (I-V) characteristics of the device. Peak to valley ratios of more than 1.5:1 were observed in the L-I and L-V curves. (12 Refs)

Subfile: A B

Descriptors: **current** density; negative resistance devices; quantum well **lasers**; resonant tunnelling devices

Identifiers: resonant tunneling injection quantum-well **lasers**; resonant tunneling induced negative differential characteristics; light-**current** curves; light-**voltage** curves; single-quantum-well semiconductor **laser**; broad-stripe **lasers**; CW threshold current density; output light power; resonant point; **current-voltage** characteristics; **peak to valley** ratios; SCH-SQW **laser**; 77 K; AlGaAs-InGaAs-GaAs

Class Codes: A4255P (Lasing action in semiconductors); A4260B (Design of specific laser systems); A7340L (Semiconductor-to-semiconductor contacts, p-n junctions, and heterojunctions); B4320J (Semiconductor lasers)

Chemical Indexing:

AlGaAs-InGaAs-GaAs int - AlGaAs int - InGaAs int - GaAs int - Al int - As int - Ga int - In int - AlGaAs ss - InGaAs ss - Al ss - As ss - Ga ss - In ss - GaAs bin - As bin - Ga bin (Elements - 3,3,2,4)

Numerical Indexing: temperature 7.7E+01 K

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104/9/8 (Item 1 from file: 8)
DIALOG(R) File 8: Ei Compendex(R)
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06138382 E.I. No: EIP02397098846

Title: Novel VCSEL-based smart pixel for high-contrast, high-gain and high-speed optical switching

Author: Knupfer, B.; Welker, M.; Jung, C.; Wiedenmann, D.; Ebeling, K.J.; Oehler, Ch.; Geisselbrecht, W.; Malzer, S.; Dohler, G.H.

Corporate Source: Institut fur Technische Physik I Universitat Erlangen, D-91058 Erlangen, Germany

Conference Title: Optoelectronic Interconnects V

Conference Location: San Jose, CA, United States **Conference Date:** 19980128-19980129

Sponsor: SPIE

E.I. Conference No.: 59664

Source: Proceedings of SPIE - The International Society for Optical Engineering v 3288 1998. p 23-32

PUBLICATION YEAR: 1998

CODEN: PSISDG **ISSN:** 0277-786X

Language: English

Document Type: CA; (Conference Article) **Treatment:** X; (Experimental)

Journal Announcement: 0209W5

ABSTRACT: We present a novel smart pixel composed of an optoelectronic threshold switch with gain and a vertical cavity surface-emitting laser (VCSEL). In this smart pixel two surface-normal input optical beams control an output optical beam emitted by the VCSEL. In this present hybrid version of the VCSEL-based smart pixel is capable of opto-optical switching with an output contrast ratio in excess of 30 dB at an optical output power of about 1.5 mW. For quasi-stationary operation we achieve an optical gain of up to 3 multiplied by 10^{*5} . We also report drastic improvements on the switching dynamics. Operating the receiver with an optical input power of 130 μ W we achieve bitrates of up to 160 Mbit/s and an optical gain of 11, while optical inputs of 410 μ W result in a maximum bitrate of 400 Mbit/s and an optical gain of 3.6. The minimum input optical energy required for switching is 765 fJ, the AC output contrast ratio is 9 dB. Optically performed NAND and NOR logic operations are demonstrated at 40 Mbit/s with a fan-out of 7.6. We further show that the functionality of this smart pixel can easily be extended to electric read-out of input optical data and to direct electric control of the VCSEL within the smart pixel configuration. In particular, we demonstrate conversion of electric input to optical output data at 1 Gbit/s. 16 Refs.

Descriptors: *Electronics packaging; Semiconductor lasers; Switching functions; Optoelectronic devices; Logic gates; Optical interconnects; Photodetectors; Current voltage characteristics; Approximation theory; Semiconducting gallium arsenide; Molecular beam epitaxy; Substrates

104/9/9 (Item 2 from file: 8)

DIALOG(R) File 8: Ei Compendex(R)

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05953905 E.I. No: EIP01506759308

Title: Enhanced CW performance of the interband cascade laser using improved device fabrication

Author: Bradshaw, J.L.; Pham, J.T.; Yang, R.Q.; Bruno, J.D.; Wortman, D.E.

Corporate Source: U.S. Army Research Laboratory, Adelphi, MD 20783-1197, United States

Source: IEEE Journal on Selected Topics in Quantum Electronics v 7 n 2 March/April 2001. p 102-105

PUBLICATION YEAR: 2001

CODEN: IJSQEN ISSN: 1077-260X

Language: English

Document Type: JA; (Journal Article) Treatment: T; (Theoretical); X; (Experimental)

Journal Announcement: 0112W3

ABSTRACT: Continuous-wave (CW) operation of a mid-infrared type-II interband cascade (IC) laser has been demonstrated at temperatures up to 142 K by improving device processing and fabrication. Also, the IC laser exhibited record-high wall-plug efficiencies (similar to 18% at 60 K) with considerable CW output powers. An analysis of the thermal resistance partially explains the still low maximum CW operating temperature and suggests further potential for improvement with continued development of fabrication/packaging techniques. 28 Refs.

Descriptors: *Quantum well lasers; Infrared devices; Semiconductor device manufacture; Quantum efficiency; Heat resistance; Semiconductor superlattices; Molecular beam epitaxy; Current voltage characteristics; Current density

Identifiers: Interband cascade laser; Continuous-wave operation; Mid-infrared laser; Differential external quantum efficiency; Threshold current density

104/9/10 (Item 3 from file: 8)
 DIALOG(R) File 8: Ei Compendex(R)
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05906488 E.I. No: EIP01416681798

Title: Mid-IR interband cascade lasers : Progress toward high performance

Author: Bruno, J.D.; Yang, R.Q.; Bradshaw, J.L.; Pham, J.T.; Wortman, D.E.

Corporate Source: U.S. Army Research Laboratory, Adelphi, MD 20783, United States

Conference Title: In-Plane Semiconductor Lasers V

Conference Location: San Jose, CA, United States Conference Date: 20010122-20010123

Sponsor: SPIE

E.I. Conference No.: 58470

Source: Proceedings of SPIE - The International Society for Optical Engineering v 4287 2001. p 1-12

PUBLICATION YEAR: 2001

CODEN: PSISDG ISSN: 0277-786X

Language: English

Document Type: CA; (Conference Article) Treatment: T; (Theoretical); X; (Experimental)

Journal Announcement: 0110W3

ABSTRACT: Type-II interband cascade (IC) lasers take advantage of the broken-gap alignment in type-II quantum wells to reuse electrons for sequential photon emissions from serially connected active regions. Here, we review our recent progress in InAs/GaInSb type-II IC lasers at emission wavelengths of 3.6-4 μ m. These semiconductor lasers have exhibited significantly higher differential quantum efficiencies and peak powers than previously reported. Low threshold current densities (e.g., similar to 56 A/cm² at 80 K) and power efficiency exceeding 14% were observed from mesa-stripe lasers when operated in cw mode. Also, these lasers were able to operate at temperatures up to similar to 252 K in pulsed mode and similar to 142 K in cw mode. We observed slope efficiencies exceeding 1 W/A/facet, corresponding to a differential external quantum efficiency exceeding 600%, from devices at temperatures above 80 K. A peak output power of similar to 6 W/facet was observed from an IC laser at 80 K. 38 Refs.

Descriptors: *Semiconductor lasers; Infrared radiation; Semiconducting indium compounds; Semiconducting gallium compounds; Performance; Light emission; Quantum efficiency; Current density; Molecular beam epitaxy; Thermocouples; X ray diffraction analysis; Current voltage characteristics

104/9/12 (Item 5 from file: 8)
 DIALOG(R) File 8: Ei Compendex(R)
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05818514 E.I. No: EIP01216511145

Title: Characterization and modeling of quantum cascade lasers
 based on a photon-assisted tunneling transition

Author: Blaser, S.; Diehl, L.; Beck, M.; Faist, J.; Oesterle, U.; Xu, J.;
 Barbieri, S.; Beltram, F.

Corporate Source: Institute of Physics University of Neuchatel, CH-2000
 Neuchatel, Switzerland

Source: IEEE Journal of Quantum Electronics v 37 n 3 March 2001 2001. p
 448-455

PUBLICATION YEAR: 2001

CODEN: IEJQA7 ISSN: 0018-9197

Language: English

Document Type: JA; (Journal Article) Treatment: T; (Theoretical)

Journal Announcement: 0105W4

ABSTRACT: A detailed characterization and modeling of long-wavelength (λ similar to 10 μm) quantum cascade (QC) lasers based on a photon-assisted tunneling transition are presented. In particular, the influence of the finite lifetime of the lower state of the laser transition on the current-voltage and threshold current versus temperature characteristics have been studied both theoretically and experimentally. It is shown that, for our structure, the value of the lower state lifetime can be extracted from the voltage-current curve; the value we found was 2.6 ps. In addition, this model allows to understand the abrupt degradation of the performance of the device for T greater than 150 K. Low temperature ($T = 10$ K) threshold current densities of 1.1 kA/cm^2 and a tuning range of 85 cm^{-1} in pulsed mode are reported. In continuous-wave mode, the emission linewidth of a free-running laser was determined to be 3.9 MHz. 17 Refs.

Descriptors: *Quantum well lasers; Semiconductor device models; Current voltage characteristics; Current density; Temperature; Photons; Electron tunneling; Semiconductor device structures; Degradation; Laser tuning; Laser pulses; Laser modes; Light emission

104/9/15 (Item 8 from file: 8)
DIALOG(R) File 8: Ei Compendex(R)
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05191872 E.I. No: EIP98124517959

Title: High performance laterally gain coupled InGaAs/AlGaAs DFB lasers

Author: Kamp, M.; Hofmann, J.; Forchel, A.; Schaefer, F.; Reithmaier, J.P.

Corporate Source: Univ of Wuerzburg, Wuerzburg, Ger

Conference Title: Proceedings of the 1998 International Conference on Indium Phosphide and Related Materials

Conference Location: Tsukuba, Jpn Conference Date: 19980511-19980515

Sponsor: IEEE

E.I. Conference No.: 49335

Source: Conference Proceedings - International Conference on Indium Phosphide and Related Materials 1998. IEEE, Piscataway, NJ, USA, 98CH36129. p 831-834

PUBLICATION YEAR: 1998

CODEN: CPRMEG

Language: English

Document Type: CA; (Conference Article) Treatment: X; (Experimental)

Journal Announcement: 9902W3

ABSTRACT: We have investigated gain coupled lasers based on metal gratings patterned laterally to the laser ridge. For sufficiently small ridges, the evanescent field of the laser mode couples strongly to the grating. Ridge waveguide lasers were processed from an InGaAs/AlGaAs GRINSCH structure. The cw threshold currents are around 12 mA for a cavity with 800 μ m length and 2.5 μ m width. These values are comparable to reference lasers without metal grating, which shows that there is no significant penalty from loss coupling for a properly designed device. Pulsed monomode emission up to output power levels of 64 mW and sidemode suppression ratios up to 45 dB have been obtained, indicating that the lateral coupling is strong enough for stable DFB operation. (Author abstract) 6 Refs.

Descriptors: *Distributed feedback lasers; Current voltage characteristics; Semiconducting indium gallium arsenide; Semiconducting aluminum compounds; Semiconductor device structures; Threshold voltage; Laser resonators; Diffraction gratings

104/9/16 (Item 9 from file: 8)

DIALOG(R) File 8: Ei Compendex(R)

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05012650 E.I. No: EIP98054192712

Title: Low-threshold room-temperature CW operation of ZnSe-based blue/green laser diodes grown on conductive ZnSe substrates

Author: Nakanishi, F.; Doi, H.; Okuda, N.; Matsuoka, T.; Katayama, K.; Saegusa, A.; Matsubara, H.; Yamada, T.; Uemura, T.; Irikura, M.; Nishine, S.

Corporate Source: Sumitomo Electric Industries, Ltd, Osaka, Jpn

Source: Electronics Letters v 34 n 5 Mar 5 1998. p 496-497

PUBLICATION YEAR: 1998

CODEN: ELLEAK ISSN: 0013-5194

Language: English

Document Type: JA; (Journal Article) Treatment: T; (Theoretical)

Journal Announcement: 9807W2

ABSTRACT: SCH laser structures of ZnCdSe/ZnSe/ZnMgSSe have been grown on conductive ZnSe substrates by molecular beam epitaxy. Continuous-wave laser operation at room temperature was observed at a wavelength of 527.9 nm (2.349 eV). The threshold current and threshold voltage were 44 mA (222 A/cm**2) and 5.4 V, respectively. A lifetime of 74 s at a constant light output power of 2 mW was obtained. (Author abstract) 7 Refs.

104/9/17 (Item 10 from file: 8)
DIALOG(R) File 8: Ei Compendex(R)
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04929253 E.I. No: EIP98024042750

Title: Analysis of degradation mechanisms in high power AlGaAs 808 nm laser bars

Author: Arias, J.; Esquivias, I.; Daiminger, F.X.; Heineman, S.; Vassilakis, E.; Hirtz, J.P.

Corporate Source: Universidad Politecnica de Madrid, Madrid, Spain

Conference Title: Proceedings of the 1997 10th IEEE Lasers and Electro-Optics Society Annual Meeting, LEOS. Part 2 (of 2)

Conference Location: San Francisco, CA, USA Conference Date: 19971110-19971113

Sponsor: IEEE

E.I. Conference No.: 47740

Source: Conference Proceedings - Lasers and Electro-Optics Society Annual Meeting-LEOS v 2 1997. IEEE, Piscataway, NJ, USA, 97CB36057. p 72-73

PUBLICATION YEAR: 1997

CODEN: CPLSE4 ISSN: 1092-8081

Language: English

Document Type: CA; (Conference Article) Treatment: X; (Experimental)

Journal Announcement: 9804W1

ABSTRACT: The degradation mechanisms of 20 W continuous wave (CW) AlGaAs linear array bars were studied by analyzing the subthreshold optical power-current-voltage characteristics (P-I-V) at different aging times. The laser structure is a single quantum well graded index separate confinement heterostructure (SQW-GRINSCH) grown by metal organic chemical vapor deposition. The main optoelectronic characteristics (threshold current, slope efficiency, conversion efficiency, lasing wavelength) and the P-I-V characteristics were measured as a function of the aging time. The spontaneous optical power emitted from the low-reflectivity facet and the external voltage were accurately measured at drive currents ranging between 1 nA and 1 A. 2 Refs.

104/9/18 (Item 11 from file: 8)
DIALOG(R) File 8: Ei Compendex(R)
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04271290 E.I. No: EIP95102904157

Title: Multiple wavelength Fabry-Perot lasers fabricated by
vacancy-enhanced quantum well disordering

Author: Hofstetter, D.; Zappe, H.P.; Epler, J.E.; Riel, P.

Corporate Source: Paul Scherrer Inst Zurich, Zurich, Switz

Source: Applied Physics Letters v 67 n 14 Oct 2 1995. p 1978-1980

PUBLICATION YEAR: 1995

CODEN: APPLAB ISSN: 0003-6951

Language: English

Document Type: JA; (Journal Article) Treatment: X; (Experimental)

Journal Announcement: 9512W3

ABSTRACT: The use of vacancy-enhanced disordering to locally shift the band gap of a single quantum well separate-confinement double heterostructure is described. Ridge waveguide Fabry-Perot lasers were fabricated from unshifted and shifted sections on the same laser bar. Both showed cw output powers up to 12 mW per facet, threshold currents less than 14 mA and a slope efficiency of 0.42 W/A. These values are comparable with those of unannealed devices fabricated from the same material. 12 Refs.

Descriptors: *Quantum well lasers; Fabrication; Annealing; Energy gap; Semiconducting gallium arsenide; Semiconducting aluminum compounds; Emission spectroscopy; Photoluminescence; Current voltage characteristics; Plasmas

104/9/19 (Item 1 from file: 95)

DIALOG(R) File 95:TEME-Technology & Management

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01393722 20000206479

Optimization of GaAsP/AlGaAs-based QW laser structures for high power 800 nm operation

(Optimierung GaAsP/AlGaAs-basierter Quantentopflaserstrukturen fuer den Hochleistungsbetrieb bei 800 nm)

Knauer, A; Bugge, F; Erbert, G; Wenzel, H; Vogel, K; Zeimer, U; Weyers, M F.-Braun-Inst. f. Hoechstfrequenztech., Berlin, D

Ninth Biennial Workshop on Organometallic Vapour Phase Epitaxy, 23-27 May 1999, Ponte Vedra Beach, FL, USA Journal of Electronic Materials, v29, n1, pp53-56, 2000

Document type: journal article; 06 Conference paper Language: English

Record type: Abstract

ISSN: 0361-5235

ABSTRACT:

A detailed study is presented of the MOVPE (metal-organic vapor phase epitaxy) growth of 800 nm diode laser structures based on the combination of a GaAsP quantum well with well-established AlGaAs waveguide structures. By optimizing the strain and thick-ness of the quantum well, highly-reliable diode lasers with low threshold current and high efficiency were demonstrated. 100 micron aperture 'broad area' devices mounted epi-side up achieve a CW output power of 8.9 W with a wall-plug efficiency of 50 %. These output powers represent record values for diode lasers in this wavelength range. Reliability measurements at 1.5 W and 50 deg C ambient temperature suggest lifetimes > 10000 h.

DESCRIPTORS: ALUMINIUM GALLIUM ARSENIDE; QUANTUM WELL LASERS; METALORGANIC VAPOUR PHASE EPITAXY; DIODE LASERS; WAVE GUIDES; FILM THICKNESS; APERTURE; CONTINUOUS WAVE OPERATION; DURATION OF LIFE; ARSENIDES; X RAY DIFFRACTION; THRESHOLD CURRENT; CURRENT VOLTAGE CHARACTERISTICS;

104/9/20 (Item 2 from file: 95)
 DIALOG(R) File 95:TEME-Technology & Management
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01287701 E99020268229

Room-temperature **continuous wave** operation of InGaN laser diodes with vertical conducting structure on Si substrate
 (Der kontinuierliche Betrieb von InGaN-Laserdioden mit einer senkrechtleitenden Struktur auf einem SiC-Substrat bei Raumtemperatur)
 Kuramata, A; Kubota, S; Soejima, R; Domen, K; Horino, K; Tanahashi, T
 Fujitsu Lab., Atsugi, J
 Japanese Journal of Applied Physics, Part 2 Letters, v37, n11B, pp1373-1375
 , 1998
 Document type: journal article Language: English
 Record type: Abstract
 ISSN: 0021-4922

ABSTRACT:

For the first time room-temperature **continuous wave** operation of InGaN laser diodes with a vertical conducting structure fabricated on a SiC substrate was demonstrated. The **threshold current** and **voltage** were 84 mA and 12 V, respectively, under pulsed operation. The **threshold current** corresponds to a **threshold current density** of 5.6 kA/cm², which is the lowest ever reported with InGaN laser diodes on a SiC substrate. Under **continuous wave** operation, the **threshold current** and **voltage** were 115 mA and 10.5 V, respectively. The peak lasing wavelength was 408.2 nm. Longitudinal modes of the optical cavity were clearly observed. The **laser oscillation** was observed up to 40 deg C under CW operation.

DESCRIPTORS: ROOM TEMPERATURE; CONTINUOUS ACTION LASERS;
 CONTINUOUS WAVE OPERATION; NITRIDES; 3 5 COMPOUNDS; DIODE
 LASERS; THRESHOLD CURRENT; SANDWICH CONSTRUCTION;
 CURRENT VOLTAGE CHARACTERISTICS; LIGHT EMISSION; OUTPUT
 POWER; SILICON CARBIDE; GALLIUM NITRIDE; INDIUM GALLIUM NITRIDE
 IDENTIFIERS: SENKRECHTLEITUNG; SENKRECHTLEITENDE STRUKTUR;
 Indiumgalliumnitridlaserdiode; Raumtemperatur-CW-Betrieb

104/9/21 (Item 3 from file: 95)

DIALOG(R) File 95:TEME-Technology & Management

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01212875 C98050225491

InGaN/GaN/AlGaIn-based laser diodes with an estimated lifetime of longer than 10000 hours

(InGaN/GaN/AlGaIn-Laserdioden mit einer abgeschätzten Lebensdauer von mehr als 10000 Stunden)

Nakamura, S

Nichia Chem. Ind., Tokushima, J

MRS Bulletin, v23, n5, pp37-43, 1998

Document type: journal article Language: English

Record type: Abstract

ISSN: 0883-7694

ABSTRACT:

InGaN MQW LDs (multiple quantum well laser diodes) with MD-SLS (modulation-doped strained-layer superlattice) cladding layers grown on the ELOG (epitaxially laterally overgrown) substrate were demonstrated to have an estimated lifetime longer than 10000 h under conditions of RT-cw (room temperature continuous-wave) operation. The use of the MD-SLS cladding layers and the ELOG substrate was effective for lengthening the lifetime of the LDs. Self-pulsation phenomena were observed with a frequency of 3.5 GHz. The RIN (relative intensity noise) less than -145 dB/Hz was obtained even at 6 % optical feedback using the HF (high frequency) modulation of 600 MHz. The threshold carrier density of the InGaN MQW-structure LDs was estimated to be $3 \times 10^{19} \text{ cm}^{-3}$ using a carrier lifetime of 1.8 ns. These results indicate a promising future for the III-nitride-based short-wavelength LDs.

DESCRIPTORS: NITRIDES; DIODES; OPERATING TIME--WORKING TIME; SEMICONDUCTOR MATERIALS; CHEQUERED PATTERN; LED--LIGHT EMITTING DIODES; ELECTROLUMINESCENCE; GALLIUM NITRIDE; THERMAL EXPANSION; THIN FILMS; CRACKING--FRACTURING; EPITAXIAL TECHNIQUE; MECHANICAL STRESS; SUPERLATTICE; DISLOCATIONS; SAPPHIRE; ORGANOMETALLIC CVD METHOD; CRYSTAL GROWTH; CRYSTAL ORIENTATION; FILM THICKNESS; SILICON DIOXIDES; TRANSMISSION ELECTRON MICROSCOPES; DOPING; CURRENT VOLTAGE CHARACTERISTICS; EMISSION SPECTRUM; INDIUM NITRIDE
IDENTIFIERS: GALLIUMALUMINIUMNITRID; GALLIUMALUMINIUMINDIUMNITRID; Halbleiterdiode; In-Ga-Nitrid-Quantentopf; CVD-Methode; LED

104/9/22 (Item 4 from file: 95)

DIALOG(R) File 95:TEME-Technology & Management
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01205003 E98050686239

Materials issues for InGaN-based lasers

(Materialien fuer InGaN-Laserdioden)

Nakamura, S

Nichia Chemical Ind., Tokushima, J

Journal of Electronic Materials, v27, n4, pp160-165, 1998

Document type: journal article Language: English

Record type: Abstract

ISSN: 0361-5235

ABSTRACT:

InGaN multi-quantum-well-structure(MQW) laser diodes (LDs) with Al(0.14)Ga(0.86)N/GaN modulation doped strained-layer superlattice (MD-SLS) cladding layers grown on an epitaxially laterally overgrown GaN (ELOG) substrate were demonstrated to have a lifetime of more than 1800 h under the condition of room-temperature continuous-wave operation. On the other hand, the LDs grown directly on the sapphire substrate had a lifetime of shorter than 900 h. With the operating current increasing to above the threshold, a self-pulsation was observed to have a high frequency of 3 GHz and a photon lifetime of 0,7 ps. The use of the MD-SLS was effective for reducing the operating voltage of the LDs. The ELOG substrate was used to reduce the number of threading dislocations in the InGaN MQW structure.

DESCRIPTORS: DIODE LASERS; ALUMINIUM NITRIDE; SUPERLATTICE;
DOPING PROFILES; DURATION OF LIFE; SUBSTRATES; SAPPHIRE; CRITICAL FREQUENCY
; OPERATING VOLTAGE; QUANTUM WELLS; CRYSTAL DISLOCATION; WURTZITE LATTICE;
METALORGANIC CHEMICAL VAPOUR DEPOSITION; CRYSTAL GROWTH; CHEQUERED PATTERN;
ROOM TEMPERATURE; CURRENT VOLTAGE CHARACTERISTICS; EMISSION SPECTRUM;
IMPULSE OPERATION; DELAY TIME; THRESHOLD CURRENT; CARRIER DENSITY;
GALLIUM NITRIDE
IDENTIFIERS: InGaN-Laserdiode; Betriebsspannung

104/9/23 (Item 5 from file: 95)

DIALOG(R) File 95:TEME-Technology & Management

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01012935 E96080085227

High **CW power** (>200 mW/facet) at 3.4 micron from

InAsSb/InAlAsSb strained quantum well **diode lasers**

(Hohe Dauerstrichleistung bei 3400 nm aus einem InAsSb/InAlAsSb-Diodenlaser mit gedehntem Quantentopf)

Choi, HK; Turner, GW; Manfra, MJ

Massachusetts Inst. of Technol., Lexington, USA

Electronics Letters, v32, n14, pp1296-1297, 1996

Document type: journal article Language: English

Record type: Abstract

ISSN: 0013-5194

ABSTRACT:

Strained quantum well **diode lasers** consisting of compressively strained InAsSb active layers and tensile strained InAlAsSb barrier layers have exhibited **CW power** of 215 mW/facet at 80 K. The internal quantum efficiency and internal loss coefficient at 80 K are estimated to be 63 % and 9 cm(exp -1), respectively.

DESCRIPTORS: DIODE LASERS; INFRARED LASERS; QUANTUM WELLS

; CONTINUOUS WAVE OPERATION; CONTINUOUS ACTION

LASERS; QUANTUM EFFICIENCY; CURRENT VOLTAGE

CHARACTERISTICS; THRESHOLD CURRENT; CURRENT DENSITY;

OPERATING VOLTAGE; DOUBLE HETEROSTRUCTURE

IDENTIFIERS: INDIUM ARSENID ANTIMONID; INDIUM ALUMINIUM ARSENID ANTIMONID;

ALUMINIUM GALLIUM ARSENID ANTIMONID; Dauerstrichleistung;

Infrarot-Diodenlaser; Quantentopf

104/9/24 (Item 6 from file: 95)

DIALOG(R) File 95:TEME-Technology & Management

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00816726 E94081089226

High power and high efficiency operation of Al-free
InGaAs/GaInAsP/GaInP GRINSCH SQW lasers (λ about 0.98 micron)
(Al-free InGaAs/GaInAsP/GaInP-GRINSCH-Laser)

Zhang, G

Tampere Univ. of Technol., Tampere, SF

Electronics Letters, v30, n15, pp1230-1232, 1994

Document type: journal article Language: English

Record type: Abstract

ISSN: 0013-5194

ABSTRACT:

High power and high quantum efficiency Al-free InGaAs/GaInAsP/GaInP GRINSCH SQW lasers emitting at 0.98 micron are reported. A CW output power as high as 580 mW and single lateral mode power up to 280 mW were achieved for the Al-free ridge waveguide lasers at room temperature. The lasers exhibited a high internal quantum efficiency of 99 % and low internal waveguide loss of $3.2 \text{ cm}(\exp -1)$. A high characteristic temperature of 217 K and low threshold current density of $109 \text{ A/cm}(\exp 2)$ were also obtained. The results are the best obtained for Al-free 0.98 micron pumping lasers.

DESCRIPTORS: GALLIUM INDIUM ARSENIDE; INDIUM GALLIUM ARSENIDE PHOSPHIDE;
DIODE LASERS; OUTPUT POWER; EFFICIENCY FACTOR;
LASER MODES; CURRENT DENSITY; THRESHOLD CURRENT;
LAMP PUMPING; QUANTUM WELLS; HETEROSTRUCTURE; INDEX OF REFRACTION; MBE--
MOLECULAR BEAM EPITAXY; CURRENT VOLTAGE CHARACTERISTICS
IDENTIFIERS: GRINSCH LASER; Laserdiode; optische Pumpquelle

104/9/25 (Item 1 from file: 99)

DIALOG(R) File 99:Wilson Appl. Sci & Tech Abs

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2497079 H.W. WILSON RECORD NUMBER: BAST02129696

High-power (1.9 mm) quantum cascade lasers

Slivken, S; Huang, Z; Evans, A

Applied Physics Letters v. 80 no22 (June 3 2002) p. 4091-3

DOCUMENT TYPE: Feature Article ISSN: 0003-6951 LANGUAGE: English

RECORD STATUS: Corrected or revised record

ABSTRACT: The authors demonstrate high-power quantum cascade lasers emitting at $\lambda > 9$ μm . XRD provides evidence of the accurate control of layer thickness and interfaces. Excellent peak power for uncoated lasers is obtained at 300 K for 75 period structures. At 300 K, the threshold current density is only 1.4 kA/cm². Between 300 and 425 K, the laser shows a characteristic temperature of 167 K. For a duty cycle of 6 percent, greater than 150 mW of average power is measured per facet. Simulation of the average power output indicates a thermal resistance of 12 K/W for epilayer-up mounted ridges.

DESCRIPTORS: Quantum cascade lasers--Temperature effect;
Current-voltage characteristics;

116/9/7 (Item 2 from file: 2)

DIALOG(R) File 2:INSPEC

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06365487 INSPEC Abstract Number: A9620-4255R-011, B9610-4320G-047

Title: Temporal analysis of pulsed phase conjugation in laser amplifiers:
application to Nd:YVO/sub 4/

Author(s): Brignon, A.

Journal: Journal of the Optical Society of America B (Optical Physics)
vol.13, no.8 p.1748-57

Publisher: Opt. Soc. America,

PUBLICATION DATE: Aug. 1996 Country of Publication: USA

CODEN: JOBPDE ISSN: 0740-3224

SICI: 0740-3224(199608)13:8L.1748:TAPP;1-R

Material Identity Number: G704-96009

U.S. Copyright Clearance Center Code: 0740-3224/96/0801748-10\$10.00

Language: English Document Type: Journal Paper (JP)

Treatment: Theoretical (T); Experimental (X)

ABSTRACT: The theory of phase conjugation in laser amplifiers by saturable-gain degenerate four-wave mixing with copolarized beams is developed for pulses of arbitrary temporal shape and duration in the limit of a weak signal beam. The influence of the input pulse's characteristics (energy, temporal pulse shape, duration) on the phase-conjugate reflectivity and on the conjugate pulse shape is analyzed. A sharp instantaneous peak of phase-conjugate reflectivity is predicted at high intensities of the four-wave mixing beams. This effect is experimentally demonstrated at $\lambda = 1064$ nm in a Nd:YVO/sub 4/ amplifier pumped by a CW Ti:sapphire laser. A transient peak reflectivity of R~50% is thus obtained, corresponding to an enhancement of 1.6* compared with the maximum steady-state reflectivity. The experimental results and the theoretical predictions are in good agreement. (25 Refs)

28feb06 16:27:53 User259284 Session D3509.5

SYSTEM:OS - DIALOG OneSearch

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 File 344:Chinese Patents Abs Jan 1985-2006/Jan
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 File 2:INSPEC 1898-2006/Feb W3
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 File 25:Weldasearch-19662006/Jan (c) TWI Ltd
 File 31:World Surface Coatings Abs 1976-2006/Feb
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 File 94:JICST-EPlus 1985-2006/Dec W1
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 File 99:Wilson Appl. Sci & Tech Abs 1983-2006/Jan
 File 103:Energy SciTec 1974-2006/Jan B2
 File 118:ICONDA-Intl Construction 1976-2006/Jan
 File 134:Earthquake Engineering Abstracts 1966-2006/Feb
 File 144:Pascal 1973-2006/Feb W1
 File 239:Mathsci 1940-2006/Apr
 File 240:PAPERCHEM 1967-2006/Feb W3
 File 248:PIRA 1975-2006/Jan W5
 File 293:Engineered Materials Abstracts 1966-2006/Feb
 File 315:ChemEng & Biotec Abs 1970-2005/Dec
 File 323:RAPRA Rubber & Plastics 1972-2006/Jan
 File 335:Ceramic Abstracts/World Ceramics Abstracts 1966-2006/Feb
 File 434:SciSearch(R) Cited Ref Sci 1974-1989/Dec

Set	Items	Description
S1	177560	CW OR CONTINUOUS??(2N)WAVE??
S2	108522	S1 AND (LASER? ? OR DIODE? ?)
S3	14590	S1 AND YAG
S4	1440	S1 AND GARNET
S5	108710	S2:S4
S6	210	S5 AND INPUT????(3N)PULS????
S7	16	S6 AND COMPRESS???????
S8	5	S6 AND ULTRASHORT?
S9	1	S6 AND ULTRA()SHORT
S10	1	S5 AND NANOPULS?
S11	11	S5 AND NANO??(2N)PULS???????
S12	2622	S5 AND NS
S13	912	S5 AND NANOSEC?
S14	2644	S5 AND PICOSEC?
S15	2583	S5 AND PS
S16	1191	S5 AND FS
S17	2844	S5 AND FEMTOSEC?
S18	268	S12:S17 AND INPUT???????
S19	417	S6:S11 OR S18
S20	2	S19 AND IV
S21	0	S19 AND I()V
S22	1	S19 AND (CURRENT?? OR AMPER?????) (2N) (VOLT?? OR POTENTIAL? ? OR VOLTAGE? ?)
S23	4	S19 AND POWER(SN) (METRIC OR METRICS OR CHARACTERISTIC???? - OR PROPERT???? OR CURVE?? OR GRAPH???? OR PLOT OR PLOTS OR PLOTT?????)

S24 50 S19 AND POWER(5N) (AMPLITUD??????? OR PEAK????? OR MAXIMUM?? OR MAXIMA?? OR MAXIMI?????????)
 S25 39 S7:S11 OR S20:S23
 S26 5 S24 AND THRESHOLD?
 S27 1 S24 AND DERIV???????
 S28 1 S24 AND DUTY
 S29 828 S5 AND DUTY
 S30 597 S29 AND POWER
 S31 46 S30 AND VOLTAGE??
 S32 139 S30 AND CURRENT
 S33 66 S30 AND INPUT????
 S34 2 S30 AND S31 AND S32 AND S33
 S35 1 S24 AND S30:S33
 S36 44 S8:S11 OR S20:S23 OR S25:S28 OR S34 OR S35
 S37 32 S36 AND INPUT?????
 S38 4 S36 AND THRESHOLD????(3N) (CURRENT OR CURRENTS OR AMPERAGE-
 ?? OR VOLTAGE?? OR POTENTIAL OR POTENTIALS OR VOLT?? OR POWER)
 S39 7 S36 AND INPUT????(3N) (CURRENT OR CURRENTS OR AMPERAGE?? OR
 VOLTAGE?? OR POTENTIAL OR POTENTIALS OR VOLT?? OR POWER)
 S40 155375 PULSE(2N)WIDTH?? OR DUTY() (CYCLE?? OR CYCLING??)
 S41 2190 SAND40
 S42 59 S41 AND MAGNITUDE
 S43 125 S41 AND COMBIN?????????
 S44 271 S41 AND THRESHOLD?
 S45 2 S41 AND METRIC? ?
 S46 155 S41 AND INPUT????????
 S47 1978 S41 AND PULS????
 S48 90 S41 AND GREATER
 S49 150 S41 AND HIGHER
 S50 62 S41 AND LARGER
 S51 1 S41 AND BIGGER
 S52 568 S41 AND PEAK????
 S53 83 S41 AND AMPLITUD????
 S54 1 42AND43AND44
 S55 1 42AND43AND46
 S56 2 42AND43AND47
 S57 2 42AND43AND48
 S58 1 42AND43AND49
 S59 0 42AND43AND50
 S60 0 42AND43AND52
 S61 1 42AND43AND53
 S62 23 S8:S10 OR S20:S23 OR S26:S28 OR S34:S35 OR S38:S39 OR S45 OR S51 OR S54:S61
 S63 22 RD S62 (unique items)
 S64 15044 POWER? ? AND VOLTAGE? ? AND CURRENT? ? AND THRESHOLD?????
 S65 556 S64 AND (DUTY OR CYCLE OR CYCLES OR CYCLING? ?)
 S66 49 S65 AND (S1 OR LASER OR LASERS OR YAG OR GARNET)
 S67 34 S65 AND (ALGAINP OR GAAS OR GAALAS OR INGAASP PR INGAP OR INGAAS OR INGAASSB OR INASSB OR GAN OR ZNSE
 OR ARSENIDE? ? OR SELENIDE? ?)
 S68 51 S66:S67
 S69 4 S68 AND INPUT?????
 S70 34 S68 AND PULS????
 S71 1 S68 AND SWEEP????
 S72 51 S68 AND THRESHOLD?
 S73 18 S68 AND CHARACTERISTIC????
 S74 21 S68 AND (W OR WATTS OR NI=POWER)
 S75 16 S68 AND (APPLY????? OR APPLI??? OR APPLIC??????)
 S76 3 S68 AND AMPLITUD????
 S77 51 S69:S76
 S78 50 S77 NOT S62
 S79 27 RD S78 (unique items)
 S80 6 S79 AND CW
 S81 3 S79 AND CONTINUOUS??
 S82 4 S79 AND WAVE??
 S83 8 S80:S82
 S84 13634 CURRENT-VOLTAGE CHARACTERISTICS
 S85 45391 CURRENT VOLTAGE CHARACTERISTICS
 S86 4922 CURRENT VOLTAGE
 S87 9 VOLTAGE CURRENT
 S88 106812 CV
 S89 13949 (S1 OR LASER OR LASERS OR DIODE? ? OR IC=H01S?) AND S84:S87
 S90 9 S6:S19 AND S89
 S91 11 S24:S37 AND S89
 S92 57 S40:S53 AND S89
 S93 23 S62
 S94 176 S62:S77 AND S89
 S95 134 S94 AND LASER? ?
 S96 18 S95 AND CW

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S97      5   S95 AND INPUT???
S98      88  S90:S92 OR S96:S97
S99      62  RD S98 (unique items)
S100     61  S99 NOT (S83 OR S63)
S101      5   S42:S53 AND S100
S102      0   S63 AND S100
S103     22  THRESHOLD? AND S100
S104     25  S101:S103
S105      9   INPUT()PULSE? ? AND CW()LASER? ?
S106     24  INPUT()PULSE? ? AND CONTINUOUS??()WAVE? ?(2W)LASER? ?
S107     29  INPUT()PULSE? ? AND CW(2W)LASER? ?
S108     51  S105:S107
S109     28  RD S108 (unique items)
S110     55  S104 OR (S83 OR S63)
S111     27  S109 NOT S110
S112     11  S111 AND POWER
S113      8   S111 AND CHARACTERISTIC? ?
S114      2   S111 AND AMPLITUDE? ?
S115      4   S111 AND SEMICONDUCT??????
S116     21  S112:S115

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CAS/STN FILE 'HCAPLUS' ENTERED AT 15:54:55 ON 28 FEB 2006

L1 32200 SEA ABB=ON PLU=ON CW OR C W OR CONTINUOUS (2A) WAVE
 L2 1799 SEA ABB=ON PLU=ON INPUT##### (2A) PULSE
 L3 6915 SEA ABB=ON PLU=ON APPL##### (2A) PULSE
 L4 945 SEA ABB=ON PLU=ON INITIAL### (2A) PULSE
 L5 120 SEA ABB=ON PLU=ON L1 AND (L2 OR L3 OR L4)
 L6 30 SEA ABB=ON PLU=ON L2 AND L5
 L7 25 SEA ABB=ON PLU=ON L6 AND LASER
 L8 3 SEA ABB=ON PLU=ON L6 AND DIODE
 E SEMICONDUCTOR LASERS/CT
 L9 21576 SEA ABB=ON PLU=ON (OSCILLATORS/CT OR LASERS/CT OR "SOLID
 STATE LASERS"/CT) AND SEMICONDUCT?
 L10 25042 SEA ABB=ON PLU=ON ("ELECTROLUMINESCENT DEVICES"/CT OR
 "INTERCONNECTIONS, OPTICAL"/CT OR "QUANTUM BOX DEVICES"/CT OR
 "QUANTUM DOT DEVICES"/CT OR "QUANTUM WELL DEVICES"/CT) AND
 SEMICONDUCT?
 L11 11886 SEA ABB=ON PLU=ON ("ELECTROLUMINESCENT DEVICES"/CT OR
 "INTERCONNECTIONS, OPTICAL"/CT OR "QUANTUM BOX DEVICES"/CT OR
 "QUANTUM DOT DEVICES"/CT OR "QUANTUM WELL DEVICES"/CT) AND
 LASER
 L12 1 SEA ABB=ON PLU=ON US20040120363/PN
 L13 216 SEA ABB=ON PLU=ON L1 AND H01S003?/IC,ECLA
 L14 156 SEA ABB=ON PLU=ON L1 AND 372?/NCL
 L15 53 SEA ABB=ON PLU=ON (L2 OR L3 OR L4) AND 372?/NCL
 L16 78 SEA ABB=ON PLU=ON (L2 OR L3 OR L4) AND H01S003?/IC,ECLA
 L17 120 SEA ABB=ON PLU=ON (L5 OR L6 OR L7 OR L8)
 L18 28656 SEA ABB=ON PLU=ON (L9 OR L10) AND LASER
 L19 2 SEA ABB=ON PLU=ON L13 AND L16
 L20 2 SEA ABB=ON PLU=ON L14 AND L15
 L21 469 SEA ABB=ON PLU=ON (L5 OR L6 OR L7 OR L8) OR (L13 OR L14 OR
 L15 OR L16 OR L17)
 L22 469 SEA ABB=ON PLU=ON (L19 OR L20 OR L21)
 L23 468 SEA ABB=ON PLU=ON L22 NOT L12
 L24 59 SEA ABB=ON PLU=ON L23 AND L2
 L25 383 SEA ABB=ON PLU=ON L23 AND L1
 L26 29 SEA ABB=ON PLU=ON L24 AND L25
 L27 7 SEA ABB=ON PLU=ON L26 AND (NS OR N S OR NANOSEC?)
 L28 2 SEA ABB=ON PLU=ON L26 AND (HIGH##### OR OUTPUT#####) (3A) POWER
 L29 2237 SEA ABB=ON PLU=ON CONTINUOUS## (6A) WAVE AND CONTINUOUS#### (6A)
 ?PULS? AND WAVE (6A) ?PULS?
 L30 1773 SEA ABB=ON PLU=ON CONTINUOUS## (8A) SEMICONDUCT#####
 L31 16868 SEA ABB=ON PLU=ON CONTINUOUS## (8A) LASER
 L32 1513 SEA ABB=ON PLU=ON CONTINUOUS## (8A) DIODE
 L33 40 SEA ABB=ON PLU=ON L29 AND L30
 L34 1063 SEA ABB=ON PLU=ON L29 AND L31
 L35 64 SEA ABB=ON PLU=ON L29 AND L32
 L36 3 SEA ABB=ON PLU=ON L33 AND L34 AND L35
 L37 0 SEA ABB=ON PLU=ON L7 AND NANOPULS?
 L38 0 SEA ABB=ON PLU=ON L7 AND NANO PULS#####
 L39 4 SEA ABB=ON PLU=ON L7 AND (SEC OR MS OR MSEC OR MU SEC OR
 SECOND OR NS OR NANO) (3A) PULS#####
 L40 13 SEA ABB=ON PLU=ON L8 OR (L19 OR L20) OR (L27 OR L28) OR L36 OR L39
 L41 12 SEA ABB=ON PLU=ON L40 NOT L12

FILE 'STNGUIDE' ENTERED AT 16:08:13 ON 28 FEB 2006

FILE 'HCAPLUS' ENTERED AT 16:10:10 ON 28 FEB 2006

L42 43390 SEA ABB=ON PLU=ON ?PULS?(4A)(?DURATION? OR LASTING OR LASTS
OR ?INTERVAL? OR ?CLOCK? OR ?TIMING? OR ?TIME?)

FILE 'HCAPLUS' ENTERED AT 16:10:17 ON 28 FEB 2006

L43 11840 SEA ABB=ON PLU=ON ?PULS?(4A)RATE
L44 30 SEA ABB=ON PLU=ON L1 AND L2
L45 12 SEA ABB=ON PLU=ON (L42 OR L43) AND L44
L46 6 SEA ABB=ON PLU=ON L45 NOT (L40 OR L12)

FILE 'STNGUIDE' ENTERED AT 16:10:57 ON 28 FEB 2006

FILE 'HCAPLUS' ENTERED AT 16:12:33 ON 28 FEB 2006

L47 37690 SEA ABB=ON PLU=ON CONTINUOUS##(1A)(LIGHT OR LASER OR WAVE)
OR L1
L48 50 SEA ABB=ON PLU=ON L47 AND INPUT####(2A)?PULS?
L49 43 SEA ABB=ON PLU=ON L48 AND (CURRENT OR POWER OR PROPERTY OR
CHARACTERISTIC OR PARAMET? OR DUTY CYCLE OR WIDTH OR VOLTAGE
OR AMPLITUDE OR PEAK OR THRESHOLD?)
L50 19 SEA ABB=ON PLU=ON L46 OR L41 OR L12
L51 26 SEA ABB=ON PLU=ON L49 NOT L50
L52 19 SEA ABB=ON PLU=ON L51 AND (W OR WATT##### OR VALUE OR
COMBIN? OR OPERAT? OR MODE)
L53 5 SEA ABB=ON PLU=ON L51 AND (AMPLITUDE OR PEAK)
L54 2 SEA ABB=ON PLU=ON L51 AND MAXIM?
L55 12 SEA ABB=ON PLU=ON POWER AND L52
L56 14 SEA ABB=ON PLU=ON (L53 OR L54 OR L55)
D ALL TOT

FILE 'STNGUIDE' ENTERED AT 16:17:58 ON 28 FEB 2006

FILE 'HCAPLUS' ENTERED AT 16:19:24 ON 28 FEB 2006

L57 17 SEA ABB=ON PLU=ON L36 OR L56
L58 69902 SEA ABB=ON PLU=ON CURRENT(5A)VOLTAGE
L59 1229 SEA ABB=ON PLU=ON (L1 OR L2 OR L3 OR L4 OR L5 OR L6 OR L7 OR
L8 OR L9 OR L10 OR L11 OR L12 OR L13 OR L14 OR L15 OR L16 OR
L17 OR L18 OR L19 OR L20 OR L21 OR L22 OR L23 OR L24 OR L25 OR
L26 OR L27 OR L28 OR L29 OR L30 OR L31 OR L32 OR L33 OR L34 OR
L35 OR L36 OR L37 OR L38 OR L39 OR L40 OR L41) AND L58
L60 1062 SEA ABB=ON PLU=ON (L42 OR L43 OR L44 OR L45 OR L46 OR L47 OR
L48 OR L49 OR L50 OR L51 OR L52) AND L58
L61 33 SEA ABB=ON PLU=ON L56 OR L50 OR L12
L62 1977 SEA ABB=ON PLU=ON (L59 OR L60) NOT L61
L63 234 SEA ABB=ON PLU=ON L62 AND L1
L64 2 SEA ABB=ON PLU=ON L63 AND (L2 OR L3 OR L4)

01mar06 09:11:49 User259284 Session D3510.2

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 File 2:INSPEC 1898-2006/Feb W3
 File 6:NTIS 1964-2006/Feb W2
 File 8:Ei Compendex(R) 1970-2006/Feb W3
 File 14:Mechanical and Transport Engineer Abstract 1966-2006/Feb
 File 25:Weldasearch-19662006/Jan (c) TWI Ltd
 File 31:World Surface Coatings Abs 1976-2006/Feb
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 File 335:Ceramic Abstracts/World Ceramics Abstracts 1966-2006/Feb
 File 434:SciSearch(R) Cited Ref Sci 1974-1989/Dec

Set	Items	Description
S1	461	(OPTOELECTRONIC OR OPTO()ELECTRONIC?? OR ELECTROOPTIC???? OR ELECTRO()OPTIC?? OR LASER) (W) (TIMER? ? OR TIMING OR CLOCK????)
S2	133715	IC=H01S?
S3	4800	MC=L04-A02
S4	9818	MC=L04-E03B
S5	3907	MC=U13-D04A
S6	2231	MC=U13-E04?
S7	3570	MC=V07-K02?
S8	2055	MC=V07-N01?
S9	2923	MC=V08-A02B?
S10	13151	MC=V08-A03?
S11	33830	MC=V08-A04A?
S12	16	S1 AND S2:S11
S13	54	S1 AND SEMICONDUCT????(3N)LASER? ?
S14	67	S12 OR S13
S15	2	S14 AND CW
S16	3	S14 AND CONTINUOUS??(2N)WAVE??
S17	5	S15:S16
S18	157668	(CLOCK???? OR TIMING?? OR TIME OR TIMES OR TIMED OR TIMER?? OR JITTER????? OR SYNCHRONISATION? OR SYNCHRONIZATION? OR JITTER?????)/TI,DE,ID AND LASER??
S19	1901	S18 AND S2:S11
S20	14166	S18 AND SEMICONDUCT????(3N)LASER? ?
S21	3805	S18 AND CW
S22	2124	S18 AND CONTINUOUS??(2N)WAVE??
S23	57091	S18 AND PULS???

S24 5504 S18 AND INPUT????
S25 13344 S18 AND OUTPUT?????
S26 6665 S18 AND (VI OR IV OR CV OR VC OR VA OR VOLT OR VOLTS OR VOLTAGE??)
S27 15637 S19:S20
S28 103 S27 AND S21:S22 AND S23 AND S24:S25
S29 10 S28 AND S26
S30 22 S28 AND (CURRENT? ? OR AMPER???????)
S31 4 29AND30
S32 4 S29 AND COMBIN????????
S33 6 S29:S30 AND AMPLITUDE? ?
S34 4 S29:S30 AND PEAK?????
S35 16 S29:S30 AND POWER
S36 10 S29:S30 AND (PS OR FS OR PICO????????? OR FEMTO????????? OR (NS OR NANOSEC?))
S37 5 35AND36
S38 9 S31:S34 OR S37
S39 26 S29:S38 AND SEMICONDUCT?????(3N)LASER? ?
S40 14 S31:S34 OR S36:S38
S41 13 39AND40
S42 14 S40:S41
S43 13 S42 NOT S17